



JOHN F. KENNEDY SPACE CENTER

TM-431-TWA

TECHNICAL MANUAL BASE SUPPORT SERVICES CONTRACTOR SHOPS, FIELD ENGINEERING, AND AREA SERVICES

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NOTICE

1. This volume is one of six volumes describing the functional responsibilities of the Base Support Services Contractor.
2. The six volumes comprising this series are as follows:
 - Vol. 1 ADMINISTRATION OF THE MAINTENANCE AND OPERATIONS PROGRAM
 - Vol. 2 PREVENTIVE MAINTENANCE
 - Vol. 3 ROADS AND GROUNDS
 - Vol. 4 HEAVY EQUIPMENT
 - Vol. 5 BASE UTILITIES
 - Vol. 6 SHOPS, FIELD ENGINEERING, AND AREA SERVICES
3. Additional copies of these manuals are available upon written request to the Assistant Manager, Maintenance Engineering, TWA-651.

TECHNICAL MANUAL
BASE SUPPORT SERVICES CONTRACTOR
SHOPS, FIELD ENGINEERING, AND AREA SERVICES

VOLUME 6 OF 6 VOLUMES

APRIL 1, 1966

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VOLUME 6

SHOPS, FIELD ENGINEERING, AND AREA SERVICES

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SECTION I AREA MAINTENANCE PROCEDURE

1.1 PURPOSE

To establish a standard for maintaining facilities and equipment in specified areas, and to define the extent of responsibility and maintenance to be accomplished by personnel assigned to such areas.

1.2 GENERAL

Area maintenance pertains to trouble/service calls, scheduled preventive maintenance (PM), and breakdown repairs of equipment. Personnel functioning in this area will be referred to herein as Area Maintenance. When a job becomes too big for Area Maintenance, shop maintenance units (Shop Maintenance) will provide assistance. Normally, most, if not all, of the other types of maintenance will be performed by shop maintenance units.

1.3 ORGANIZATION

The basic organizational elements of Area Maintenance will consist of foremen, electricians, plumbers, general mechanics, etc. in assigned areas. Engineering will provide all the technical assistance required by Area Maintenance. Crew size will be determined by the work load. As the work load increases or decreases, compensating adjustments will be made in the size of the crew by assignment of personnel from Base Support Services Contractor (BSSC) shops to the crew or from the crew to BSSC shops, as necessary.

1.4 RESPONSIBILITIES

1.4.1 NASA TECHNICAL REPRESENTATIVE. The NASA Technical Representative (Tech Rep) will be responsible for:

1. Service as point of contact for all maintenance and operations (M&O) work performed in the area
2. Budget item forecasting
3. Job estimate concurrence
4. Work inspection and acceptance
5. The coordination of scheduling of repairs, modifications, power outages, and janitorial work with the NASA group having owner responsibility.
6. Long range planning and forecasting, and information on tenants' future plans.

1.4.2 CONTRACTOR FOREMAN. The contractor foreman will be responsible for:

1. Supervision of the clerical and craft personnel assigned to the area
2. Adequate manpower and materials to perform work
3. Reports and for the operation of the Trouble Call Desk
4. Janitorial subcontractor activities
5. Performance coordinating work performed on nonrecurring work orders

1.4.3 AREA ENGINEER. The area engineer will be responsible for:

1. Monitoring and evaluating the effectiveness of the M&O program
2. Giving technical direction to Area Maintenance personnel
3. Handling all warranty claims within the area
4. Developing and maintaining area records, maps, and files
5. Initiating and reviewing support requests
6. Making recommendations for correction of any problems or construction deficiencies that may exist in his area
7. Maintaining M&O records and an up-to-date file of manuals, instructions, and drawings
8. Making periodic inspections of all facilities in accordance with the building inspection list
9. Providing technical direction to the area maintenance organization

1.5 WORK ORDER CLASSIFICATION

The NASA/BSSC Procedure for Work Order Control describes the classes of work orders that will be used.

1.6 PROCEDURES

The following procedures are to be followed by Area Maintenance:

a. Scheduled PM will be accomplished by Area Maintenance in accordance with the Preventive Maintenance Instructions, which are issued weekly. Those deficiencies detected during the performance of PM work which can be corrected by the PM crew will be corrected, provided that with immediately accessible material, repair work will not exceed 2 hours. Major deficiencies will be corrected by Shop Maintenance.

b. Trouble calls will be accomplished by Area Maintenance within established time limitations. A Field Work Order (figure 1-1), commonly called a Buck Slip, will be the authorizing document for corrective maintenance repairs and will carry the proper work order number.

FIELD WORK ORDER			
TO		LOCATION OF WORK	
KSC NO.	CONTRACTOR W.O. NO.	DATE OF REQUEST	DATE DUE
REQUESTER (Signature)		PHONE NO.	AUTH. FOR BASE OPERATIONS DIVISION (Signature)
ITEMS OF WORK			
FOREMAN'S SIGNATURE		COMPLETED DATE	HOURS ON THIS JOB

KSC FORM 7-103 (REV 10/65)

Figure 1-1. Buck Slip

c. Area Maintenance will respond to emergency or trouble/service calls, determine repairs necessary, and either correct the deficiency or take the necessary action to have the work performed by Shop Maintenance.

d. All nonroutine requirements generated by operating agencies will be submitted to the Tech Rep supporting the assigned area. The Tech Rep will determine whether the work to be accomplished requires the issuance of a standing Buck Slip or a special Buck Slip.

e. Area maintenance service is obtained by calling the Trouble Call Desk (867-3131). The desk clerk will make out Buck Slips (KSC Form 7-103) in quadruplicate and give them to the shop foreman who will see that the work is accomplished. The foreman will then send the Buck Slips to the Work Control Center. One copy will be filed by Work Control, one will be sent to the NASA Tech Rep, and two will be sent to Production Control. One of the Production Control copies will be filed and the other will be put in a historical file.

1.7 CONTRACT SURVEILLANCE

The NASA Tech Rep will:

- a. Review all completed trouble/service calls daily, or as often as he deems necessary, and evaluate them.
- b. Receive a copy of the weekly PM schedule and have the daily completions reported to him. He will selectively inspect the jobs to ensure adequate performance.
- c. Approve work in advance of any breakdown repairs to equipment - - - the work to be performed in accordance with current work codes.

1.8 FORMS

Though Area Maintenance is concerned primarily with the Buck Slip, two other forms (Preventive Maintenance Instruction and Work Order Authorization) are also utilized. The Work Order Authorization or simply Work Order (W/O) may be a standing (recurring) or a special (nonrecurring) type, depending on the time specified thereon. Figure 1-2 indicates the flow of forms and data generated to cover maintenance operations.

1.9 REPORTS

Until the automatic data processing (ADP) report is established, the schedules clerk will prepare the following reports manually:

1. Crew daily backlog by craft
2. Monthly summary of work documents processed, by type of work performed
3. Nonrecurring W/O status report for area

1.10 MAINTENANCE AREAS AND PERSONNEL RESPONSIBILITY

Area Maintenance areas and personnel requirements have been established by the BSSC. Figures 1-3 through 1-9 are Area Maintenance charts. The charts list the day-shift personnel and facilities by area. Figures 1-10 and 1-11 are Area Maintenance maps; the physical boundaries of the various maintenance areas are identified on them. Individuals responsible for Area Maintenance may be located according to the areas listed in figures 1-3 through 1-9 by calling 867-4210, for Area Maintenance personnel, and 867-6430, for Area Engineering personnel.

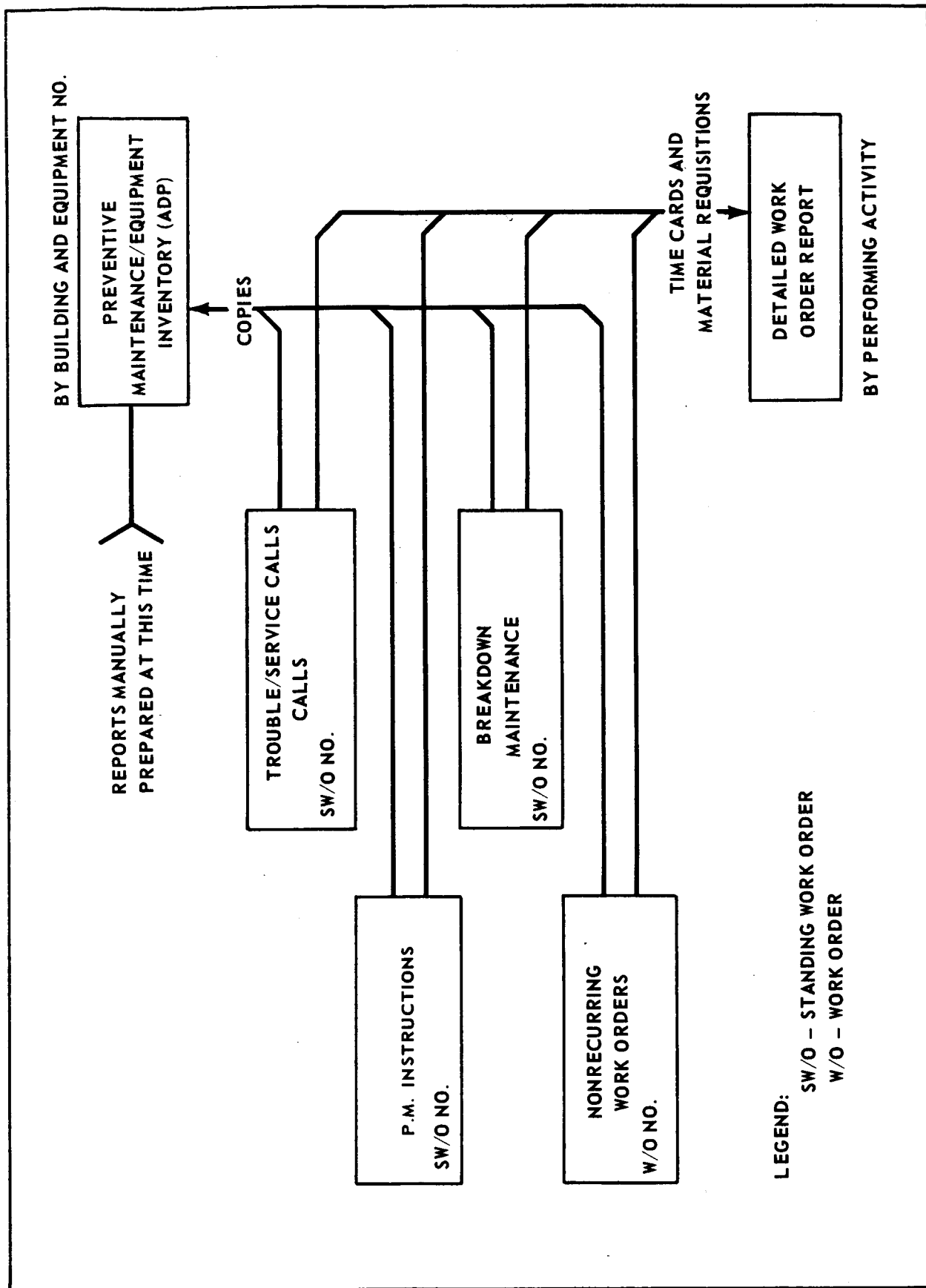


Figure 1-2. Data Flow Diagram

AREA MAINTENANCE RESPONSIBILITY Industrial Maintenance Area 1-A

Day Shift

- Lead Mechanic
- Mechanic
- Mechanic

Maint Area 1-A
Foreman

Industrial Maintenance Area # 1	Zone A
Base Support Bldg	M6-486
Security Trailers (adjacent to above bldg)	Trailers # 14-21
Corps of Engineers Bldg (ne corner West residence)	M6-336
	M6-138
	HT3
Comm Dist and Switching Center	M6-339
NASA Trailer (adjacent to above bldg nw corner)	M6-493
Base Operations Bldg (not completed)	No Number
Main Cafeteria Bldg (not completed)	M6-495
Corps of Engineers Trailer (corner 2nd & C St)	KSC 754
Occupational Health Facility Bldg	M6-595
Trailer (adjacent to above bldg sw corner)	M6-589
Heating Plant	M6-399
Security Patrol Bldg (not completed)	M6-342
KSC Headquarters Bldg	M7-351
Central Instrumentation Facility	M7-531
Auditorium & Training Facility	
Banana River Repeater Station	

Figure 1-3. Maintenance Area 1-A

AREA MAINTENANCE RESPONSIBILITY Industrial Maintenance Area 1-B

Day Shift

- Mechanic
- Carpenter

Maint Area 1-B
Foreman

Industrial Maintenance Area # 1

Fire Station Bldg
Cafeteria Trailers (across street above bldg)
Central Supply Facility Bldg
NASA Trailer (adjacent to above bldg nw corner)
Comm Maint & Storage Bldg
Supply Warehouse Bldg (not completed)
Paint & Oil Storage Bldg
Sewage Plant Office Bldg
Water Storage Plant
Power Substation
Automotive Maint & Service Bldg
Post Office
Bank

Zone B
M6-695
No Number
M6-744
KSC 810
M6-791
M6-794
M6-894
M6-895
M6-896
M6-996
M6-686
No Number
No Number

Figure 1-4. Maintenance Area 1-B

AREA MAINTENANCE RESPONSIBILITY
Operations & Checkout & Supporting Bldgs
Area 2 Zone A

Day Shift

- Lead Mechanic
- Plumber
- Electrician
- Electrician
- Mechanic
- Mechanic

Maint Area 2-A
Foreman

M7-355 Manned Spacecraft Operations & Checkout Bldg
M7-504 Spacecraft Supply & Equip Bldg
M7-505 Spacecraft Supply & Equip Bldg
M7-657 Parachute Bldg
Exchange & Corps of Eng Trailer

Figure 1-5. Maintenance Area 2-A

AREA MAINTENANCE RESPONSIBILITY

Support Bldgs to Manned Spacecraft Operations & Checkout Bldg

Area 2 Zone B

Day Shift

-Mechanic
-Electrician

Maint Area 2-B
Foreman

M7-1411 LH₂ Pad Bldg
M7-1262 MMH Pad Bldg

Space Operations & Checkout Bldg (Future)

Moss Packing Bldg (Future)
Support Bldg (Future)
Support Bldg (Future)
ECS Bldg (Future)

M7-961 Environmental Systems Test Facility #1 Bldg
M7-863 RF Systems Test Bldgs
M7-867

M7-1061 Fluid Test Support
M7-1212 Hypergolic Test Bldg #1
M7-1412 Cryogenics Test Bldg #1
M7-1469 Pyrotechnic Installation
M7-1472 MSC Ord Storage Bldg
M7-1162 Sewage Treatment Substation
M7-1210 Hypergolic Test Bldg. #2
M7-1410 Cryogenic Test Bldg. #2
M7-1417 Ordnance Field Test Lab
NASA Trailer (adjacent to Fluid Test Support Bldg)
MSC Support Bldg
M7-960 Environmental Systems Test Facility #2 Bldg
M7-1213 Hypergolic Test Bldg #3
M7-1413 Cryogenic Test Bldg #3
M7-1511 Cryogenic Test Lab #1
M7-1510 Cryogenic Test Lab #2
M7-1512 Cryogenic Test Lab #3

Figure 1-6. Maintenance Area 2-B

AREA MAINTENANCE RESPONSIBILITY

South Area Bldgs & Trailers

Area 3 South on A1A

Day Shift
-Mechanic/Plumber
-Mechanic/Plumber

Area 3 South A1A
Foreman

HT-15 Base Communication Area Trailer
HT-4 Base Communication Area Trailer
HT-5 Base Communication Area Trailer
KSC-879 Base Communication Area Trailer
KSC-816 Base Communication Area Trailer
M6-998 Base Communication Area Building
N6-1009 Pass & ID Building Gate 2
N6-1118 South Repeater Station
N6-1007 Water Pump Station
Q6-82 TPQ 18 Station (AF)
Q6-484 TPQ 18 Boresight Tower
N6-959 Gatehouse # 2

Figure 1-7. Maintenance Area 3 South A1A

AREA MAINTENANCE RESPONSIBILITY
 North Area Bldgs & Trailers
 Area 4 AIA

Day Shift
 -Mechanic
 -Electrician

Maint Area 4
Foreman

Guard Post Bldg	Orsino Road
Motor Pool Bldgs (Group)	M6-999
Security Bldg	L6-999
VAB Construction Site COE Office Bldg	No Number
VAB Constr Site COE Trailer SW VAB Bldg	No Number
VAB Construction Site Crawler Area Guard Shack	
VAB Constr Site Crawler Area COE Trailer	C 904
NASA Propellant Lab Bldg	H5-999
FEC Railroad Office Bldg	H5-996
NASA Quality Assurance Bldg	H5-994
Pad 39A Constr Site COE Trailer	No Number
Catalytic Bldg Site Two Trailers	MSC 866 (No Number) Contractor
NASA Training Lab Bldg	K8-988
NASA Training Lab Bldg	K8-989
NASA Training Lab Bldg	K8-990
LOC Supply Bldg	K8-996
LOC Supply Bldg (Blank Forms)	K8-997

Figure 1-8. Maintenance Area 4

AREA MAINTENANCE RESPONSIBILITY
North Area - VAB and Supporting Buildings
Area 5

Area Maintenance 5
Foreman

Vehicle Assembly Bldg
 500 Meteor Tower
 Universal Camera Pad
 High Resolution Tracker
 Weather Substation
 Meteorological Tower
 FCA Van Pad
 Nuclear Assembly Bldg
 Sewage Treatment Plant
 Ground Storage Reservoir
 Elevated Storage Tank
 POL Plant Storage Chem Stor Bldg
 Meteorological Tower
 Preamplifier Bldg
 Frequency Control & Analysis Bldg
 Switch Station
 Utility Annex
 Cable Terminal Bldg
 Pads A, B, C

Universal Camera Pads
 DLTR Bldgs
 Mobile Service Structure
 Access Canal
 High Pressure Gas Facility
 Universal Camera Pad
 Ordnance Storage Facility
 Turning Basin
 High Pressure Gas Storage Bldg
 Instrumentation Facility
 Launch Control Center
 Launch Equipment Shop
 Static Test Stand Road
 Meteorological Tower
 MSC Static Test Complex
 CIF Antenna Field
 FCA Van Pad
 Camera Pad
 Weather Tower

Figure 1-9. Maintenance Area 5

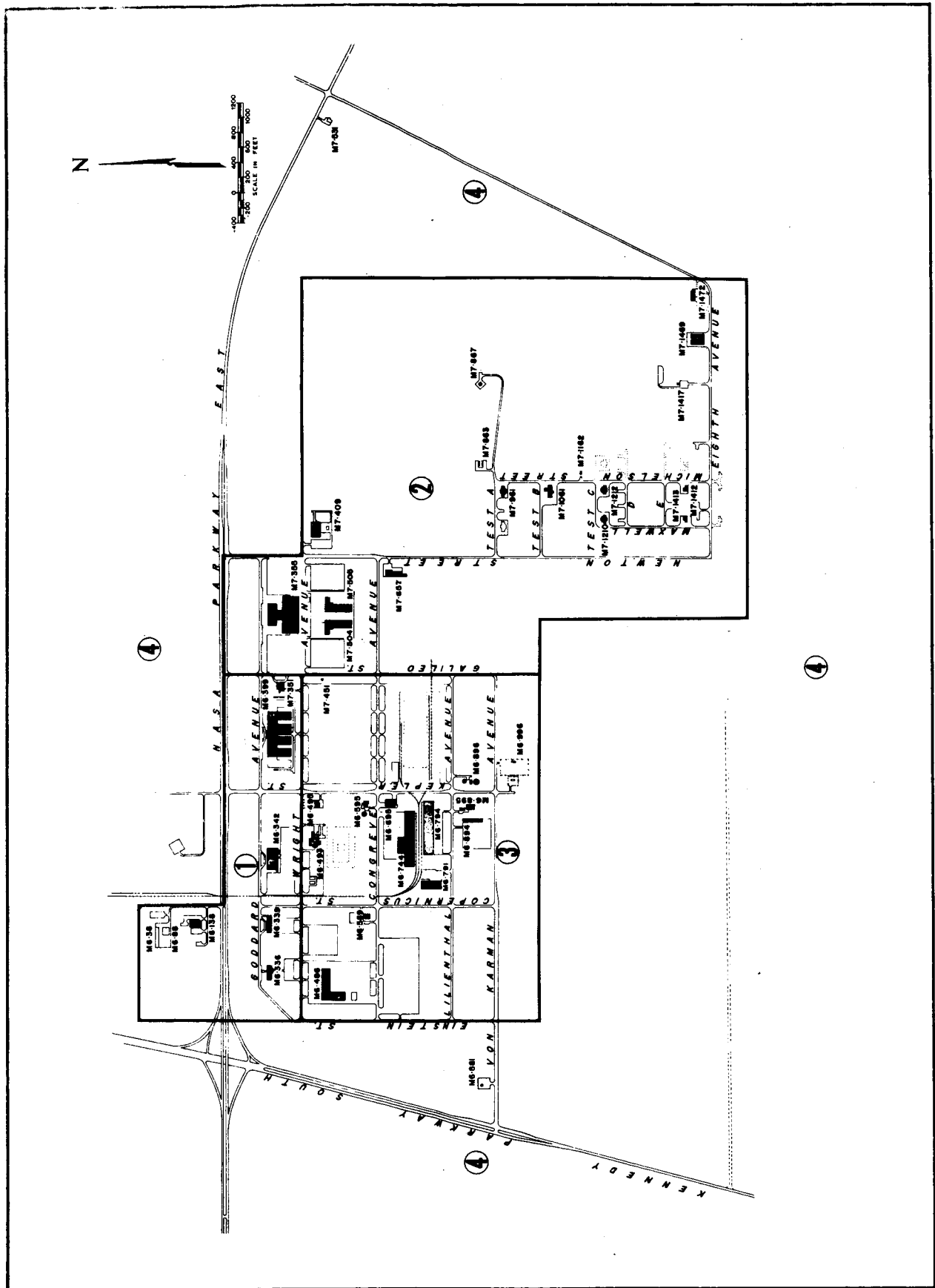
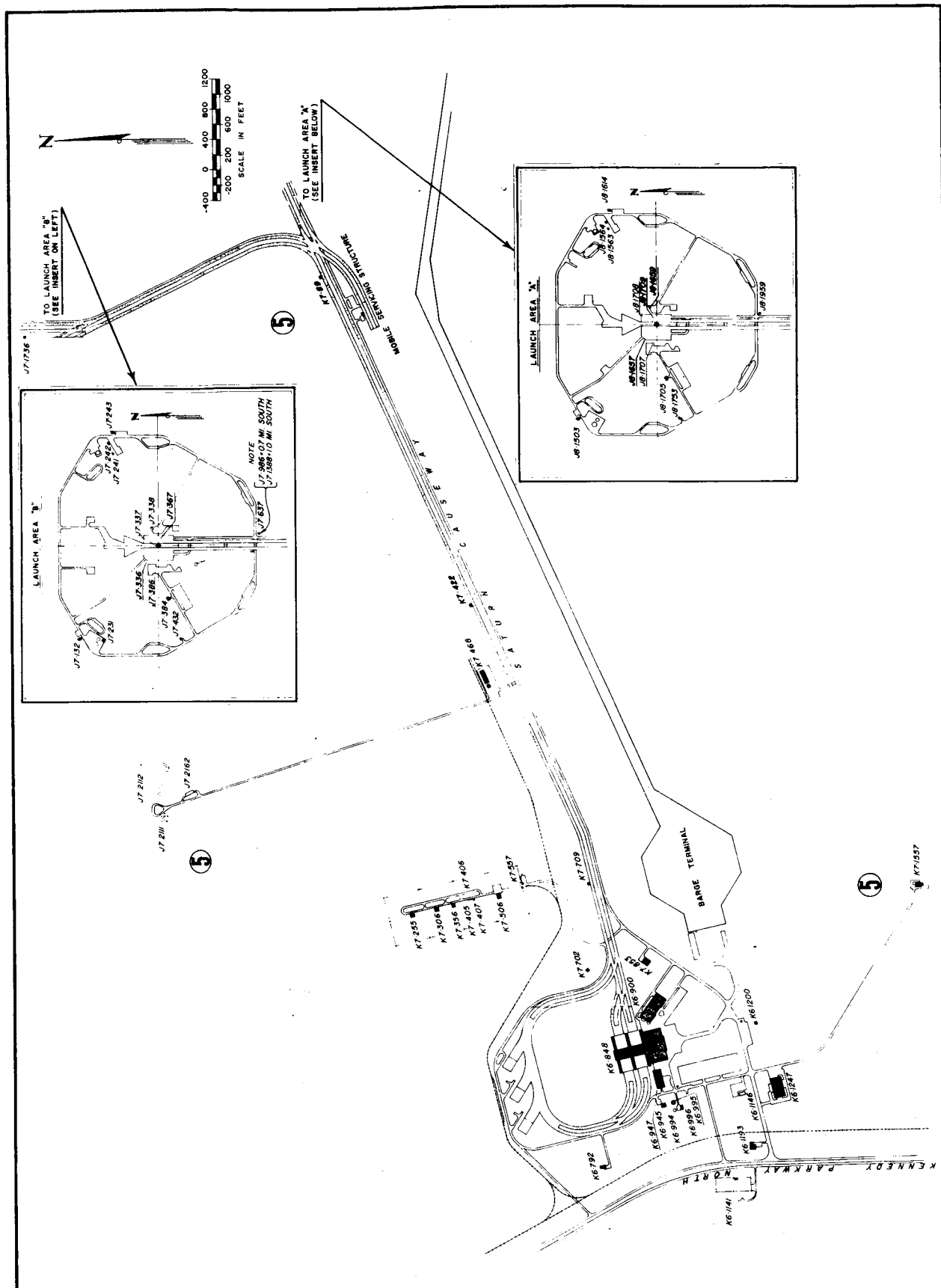


Figure 1-10. Industrial Area Maintenance Map



SECTION II

ELEVATOR MAINTENANCE AND TROUBLE CALL PROCEDURES

2.1 PURPOSE

To ensure, by establishing responsibilities and procedures, that all Base Support Services Contractor (BSSC) maintained elevators operate in a safe and reliable condition.

2.2 SCOPE

The procedures in this section apply to all TWA maintained elevators within the Manned Spacecraft Operations Building, Kennedy Space Center Headquarters Building, Central Instrumentation Facility Building, Central Telemetry Building, and the 500-Foot Weather Tower, plus additional elevators as they are assigned to TWA.

2.3 RESPONSIBILITIES

2.3.1 AREA MAINTENANCE. The Area Maintenance unit is primarily responsible for the maintenance and operation of all TWA maintained elevators. This unit will provide supervision and properly trained personnel to ensure safe, reliable operation of the equipment throughout its life expectancy. The number of personnel required to properly maintain this equipment will depend upon the number of elevators and their relative proximity. This responsibility includes performing scheduled preventive maintenance, making necessary adjustments and repairs, maintaining log books and records, and making daily operating checks of the equipment.

2.3.2 PRODUCTION ENGINEERING. The Production Engineering group is responsible for developing elevator maintenance and operating procedures, provisioning spare parts, coordinating technical training programs, coordinating safety inspections with outside agencies, and providing technical direction and support as required.

2.3.3 OTHER SUPPORT. The TWA Shops and Field Services group will provide special shop and field support as requested by Area Maintenance.

2.4 PROCEDURES (GENERAL)

2.4.1 PREVENTIVE MAINTENANCE. Preventive maintenance procedures will be prepared for each elevator and issued to the accomplishing personnel. The instructions will be designed to maintain the elevators in proper operating condition at all times and to keep breakdowns to an absolute minimum. This program will schedule

daily, weekly, monthly, semiannual, and annual maintenance.

2.4.2 EQUIPMENT RECORD CARDS. Equipment Record Cards will be prepared and maintained by Production Engineering. The cards will indicate the elevator type, manufacturer, name plate data, warranty expiration date, location, and other pertinent related data.

2.4.3 PRINTS AND DOCUMENTATION. Maintenance and operating manuals and prints shall be provided for each elevator. The most critical prints will be posted in the equipment rooms for the immediate use of the area maintenance personnel. Elevator log books, in which all work accomplished, adjustments made, and equipment failures will be recorded, will be maintained for each elevator.

2.4.4 SPARE PARTS AND TOOLS. Spare parts requirements shall be delineated by Production and Engineering and the parts stocked in the Base Operations Spare Parts Crib. Special tool requirements shall be determined by Area Maintenance Supervision with assistance from Production Engineering and the tools stocked in Base Operations Tool Crib.

2.4.5 TRAINING. Initial training courses will be provided to instruct craftsmen in the operation, maintenance, and repair of all types of elevators assigned to TWA. Additional courses will be given as the need arises and new facilities are accepted. The courses will be conducted by an elevator company or a representative of TWA Production Engineering Section.

2.4.6 SAFETY INSPECTIONS. A periodic safety inspection will be accomplished at least once per month in accordance with the American Standard Safety Code, A17-1-1960 and A17-2-1960. The inspection will be made by the personnel of a qualified elevator company who are licensed inspectors under the Industrial Safety Commission of the State of Florida. These inspectors will perform and certify the load tests, safety tests, and safety inspection. They will make and recommend changes which they feel would improve the operation.

2.5 PROCEDURES (EMERGENCY)

Emergency procedures for each elevator will be provided by Production Engineering, and will be framed and mounted on the equipment room wall. In the event of an elevator equipment malfunction or disruption of the electric power supply to TWA maintained elevators, the following steps will be undertaken:

2.5.1 PASSENGER EMERGENCY EVACUATION FROM ELEVATORS WITHIN THE CENTRAL INFORMATION FACILITY BUILDING.

2.5.1.1 When Elevator Car Can Be Moved.

- a. Shut off power at main disconnect switch (even if power to the building is off).
- b. Check approximate location of elevator car by oil level sight gauge.
- c. Open hallway door nearest car; reassure occupants and instruct them to keep away from the door. If elevator car floor is within 18 inches of landing, open car door and assist passenger from car.
- d. If elevator car floor is more than 18 inches from landing, return to equipment room. Note position of oil in sight gauge. Lower elevator car to first floor landing by opening the manual lowering valve, MLV.
- e. Open ground floor hallway door (repeat step d if necessary).
- f. If elevator car floor is within 18 inches of landing, open car door and assist passenger from car.
- g. Tag main disconnect switch and place Out of Order signs on hallway door frames.
- h. Notify trouble desk, enter statement in log book, and submit a step-by-step account of the incident.

2.5.1.2 When Elevator Car Cannot Be Moved.

- a. Ensure that the main power disconnect switch is off.
- b. Close main oil shutoff valve (hand wheel just below bottom of oil tank).
- c. If more than half of the elevator car door is visible in hallway door opening, open car door and, using a stepladder, assist passenger from the elevator.
- d. If less than half of the elevator car door is visible in a hallway door opening, open emergency exit in top of elevator car and, using a stepladder, assist passenger to the top of the car and to the floor landing.
- e. Tag main disconnect switch and main oil shutoff valve. Place Out of Order signs on hallway door frames.
- f. Followup with verbal and written reports as noted in step h preceding.

2.5.2 EMERGENCY EVACUATION FROM ELEVATORS WITHIN THE KENNEDY SPACE CENTER HEADQUARTERS BUILDING.

2.5.2.1 When Elevator Car Can Be Moved.

- a. Shut off power at main disconnect switch (even if power to the building is off).
- b. Locate car by opening ground floor hallway door with emergency key.
- c. Check cables to ensure they are in the sheaves at the bottom of the car; also check counterweight to ensure it is not at the bottom on the bumper spring.
- d. Open hallway door nearest the elevator car, reassure occupants and instruct them to keep away from the door. Estimate the distance the car will have to travel to the next landing above (if the floor of the elevator car is within 18 inches of any landing, proceed to step i).
- e. Place brake release lever (stored on tool rack on the wall) on top of brake shoe arms. Release brake and turn shaft by hand (clockwise when facing the gear box). Do not use any means other than the brake release lever to release brake.

CAUTION:

Care must be taken to see that car does not attain excessive speed. Slow car by applying the brake for each foot of car travel.

- f. Count the revolutions of the gearbox output shaft until the car has traveled the estimated distance required to the landing above (1/4 revolution per foot of elevator travel).
- g. Open hallway door with emergency key. Check to see that elevator car floor is within 18 inches of landing (repeat step f if necessary).
- h. Open car door and assist passengers from elevator.
- i. Tag out main disconnect switch and place Out of Order signs in hallway door frames.
- j. Notify trouble desk, enter statement in log book, and write a step-by-step account of the incident.

2.5.2.2 When Elevator Car Cannot Be Moved.

- a. Be certain the main power disconnect switch is OFF.
- b. If more than half of the elevator car door is visible in any hallway door opening, open car door and, using a stepladder, assist passengers from the elevator.
- c. If less than half of the elevator car door is visible in the hallway door opening, open emergency exit in top of elevator car and, using a step-ladder, assist passengers to the top of the car and then to the floor landing.
- d. Proceed with steps i and j preceding.

2.5.3 EMERGENCY EVACUATION FROM ELEVATORS WITHIN THE SPACECRAFT OPERATIONS AND CHECKOUT BUILDING.

2.5.3.1 When Elevator Car Can Be Moved.

- a. Shut off power at main disconnect switch (even if power to the building is off).
- b. Check approximate location of elevator car by oil level sight gauge.
- c. Open hallway door nearest car; reassure occupants and instruct them to keep away from the door. If elevator car floor is within 18 inches of landing, open car door and assist passenger from car.
- d. If elevator car floor is more than 18 inches from landing, return to equipment room. Note position of oil in sight gauge. Lower elevator car to first floor landing by opening the MLV .
- e. Open ground floor hallway door (repeat step d if necessary).
- f. If elevator car floor is within 18 inches of landing, open car door and assist passengers from car.
- g. Tag main disconnect switch and place Out of Order signs in hallway door frames.
- h. Notify trouble desk, enter statement in log book, and submit a step-by-step account of the incident.

2.5.3.2 When Elevator Car Cannot Be Moved.

- a. Ensure that the main power disconnect switch is off.
- b. Close main oil shutoff valve (hand wheel just below bottom of oil tank).
- c. If more than half of the elevator car door is visible in hallway door opening, open car door and, using a stepladder, assist passengers from the elevator.
- d. If less than half of the elevator car door is visible in a hallway door opening, open emergency exit in top of elevator car and, using a step-ladder, assist passengers to the top of the car and to the floor landing.
- e. Tag main disconnect switch and main oil shutoff valve. Place Out of Order signs in hallway door frames.
- f. Follow up with verbal and written reports as noted in step h preceding.

2.5.4 EMERGENCY EVACUATION FROM ELEVATORS WITHIN THE CENTRAL TELEMETRY BUILDING.

2.5.4.1 When Elevator Car Can Be Moved.

- a. Shut off power at main disconnect switch (even if power to the building is off).
- b. Locate car by opening ground floor door.
- c. If elevator car floor is within 18 inches of any landing, open car door and assist passengers from the car.
- d. If elevator car floor is more than 18 inches from a landing, wedge ground floor door open; request a passerby to assist in keeping others away from opening, and to inform maintenance personnel when elevator car floor is close to the landing level.
- e. Lower elevator car to first floor landing by opening the manual lowering valve (MLV).
- f. Open elevator car door by hand and assist passengers from car.
- g. Tag main disconnect switch and place Out of Order signs at push buttons on each floor.
- h. Notify trouble desk, enter statement in log book, and submit a step-by-step account of the incident.

2.5.4.2 When Elevator Car Cannot Be Moved.

- a. Ensure that the main power disconnect switch is off.
- b. Close main oil shutoff valve (hand wheel just below bottom of oil tank).
- c. If more than half of the elevator car door is visible in hallway door opening, open car door and, using a stepladder, assist passengers from the elevator.
- d. If less than half of the elevator car door is visible in a hallway door opening, open emergency exit in top of elevator car and, using a stepladder, assist passengers to the top of the car and to the floor landing.
- e. Tag main disconnect switch and main oil shutoff valve. Place Out of Order signs at hallway door frames.
- f. Follow up with verbal and written reports as noted in step h preceding.

2.6 WARRANTY REPORT

In the event of machine failure caused by defective parts, design deficiencies, or installation deficiencies, a warranty report must be completed.

KSC Form 26-47 (9-64) is used for this purpose.

VOLUME 6

SECTION III

FACILITIES INSTRUMENTATION PLAN

NOTE

Information for this section was not available for publication at this time. When this section is available, copies will be forwarded to recipients of this manual.

SECTION IV GUYWIRE TENSIONING

4.1 PURPOSE

To establish procedures for testing and correcting the tension on guywires of various towers located in the Kennedy Space Center and nearby areas.

4.2 GENERAL

The procedures outlined in this section cover seven types of towers; namely, the TPQ-18 Boresite Tower, UDOP Tracking Station Antenna Tower, High Resolution Tracking Station Tower, 54-Foot Weather Tower, 200-Foot Instrumentation Tower, 300-Foot Radio Antenna, and 500-Foot Weather Tower. A separate procedure is provided for each type of tower. Each procedure is to be used in conjunction with the specific preventive maintenance instructions for the tower in question. The tensioning procedures must be performed at regular intervals as called for in the preventive maintenance instructions.

4.3 TPQ-18 BORESITE TOWER

The Boresite Tower is located south of TPQ-18. To maintain this tower in a vertical position, the following procedure is used in conjunction with the preventive maintenance instructions for the tower, TB-502-001.

- a. Before checking this tower, the MILA coordinator for ETY (853-9318) must be contacted. In an emergency or during off-duty hours, contact the Cape Support Office (853-5211).
- b. Notify the Environmental Science Services Administration (853-4839) (Coast and Geodetic Survey) so that they can send personnel with theodolites to observe their check point during the operation or (at their discretion) resurvey later.
- c. If the tower is leaning and permission to straighten it is granted by the MILA Coordinator for ETY and the Environmental Science Services Administration, adjust leveling screws at base of tower legs.
- d. Check setting of load limiting cells. Both markings should indicate 400 with all four nuts touching the plates.

e. Starting with lowest guywire (guy) on any leg and its opposing guy, tighten with guy tension adjusting nut until top plate of load limiting cell retracts from the two retaining nuts; then loosen until nuts just seat on plate.

f. Continue step e with the other guys in opposing pairs until all guys are checked.

4.4 UDOP TRACKING STATION ANTENNA TOWER

The UDOP Tracking Station Antenna Tower is located at the junction of S-520 and Taylor Creek Road. To maintain this tower in a vertical position, the following procedure is used in conjunction with the preventive maintenance instructions for the tower, TW-502-001.

a. With transit, check tower for perpendicular from two locations 90 degrees (approx.) apart.

b. If tower is leaning, loosen guys on the side toward which tower is leaning, and tighten guys on the opposite side of tower.

c. Set dynamometer to zero (small adjusting screw in bottom).

d. When tower is nearly perpendicular, attach dynamometer (0 to 2500-pound) to 1/2-inch grip; then attach grip (6 feet from anchor) on lowest guy of a leg on side opposite to that toward which tower is leaning. Hook 3/4-ton chain hoist to guy loop at anchor and to dynamometer.

e. Tighten with chain hoist until dynamometer indicates 800 to 850 pounds.

f. Loosen guy turnbuckle slowly until no further change is indicated by the dynamometer. (If tower is still leaning, further loosening of guys on opposite side may be required.)

g. With dynamometer indicating 800 to 850 pounds, tighten turnbuckle until the indicated value is reduced.

h. Repeat steps d through g for the remaining lower guys.

i. Repeat steps e through h for center guys.

j. Repeat steps e through h for top guys.

4.5 HIGH RESOLUTION TRACKING STATION TOWER

The High Resolution Tracking Station Tower is located east of Kennedy Parkway and south of the Wilson interchange. To maintain this tower in a vertical position, the following procedure is used in conjunction with the preventive maintenance instructions for the tower, HO-502-001.

a. Before checking this tower, the MILA Coordinator for ETY (853-9318) must be contacted. In an emergency or during off-duty hours, contact the Cape Support Office (853-5211).

b. With transit, check tower for perpendicular from two locations 90 degrees apart.

c. If tower is leaning, level it by adjusting leveling nuts at base of legs.

d. Check setting of load limiting cells; both markings should indicate 400 with all four nuts seated.

e. Starting with lowest guy on any leg of tower, tighten guy with guy tension adjusting nut until top plate of load limiting cell retracts from two retaining nuts; then loosen until nuts just seat on plate.

f. Repeat step e for the remaining lower guys and each successive group of higher guys until all have been tensioned.

4.6 54-FOOT WEATHER TOWERS

There are ten 54-Foot Weather Towers located at various points throughout KSC (figure 4-1). To maintain these towers in a vertical position, the following procedure is used in conjunction with the preventive maintenance instructions for the tower being checked.

a. Select the proper set of preventive maintenance instructions (one of the following list).

1. MB-502-001-54WT-8-J6-1869
2. MC-502-001-54WT-6-L6-75
3. MD-502-001-54WT-1-L7-988
4. ME-502-001-54WT-2-M7-335
5. MF-502-001-54WT-5-N6-2274
6. MG-502-001-54WT-7-J7-2111



7. MH-502-001-54WT-9-H4-1723
8. MI-502-001-54WT-10-H5-585
9. MJ-502-001-54WT-11-G5-961
10. MK-502-001-54WT-12-G4-1318

b. Sighting over a plumbline from two positions 90 degrees (approx.) apart, check tower for perpendicular.

c. If tower is leaning, level it by adjusting leveling nuts at the base of the tower legs.

d. Set dynamometer to zero (small adjusting screw in bottom).

e. Attach dynamometers (0 to 2500-pound) to 1/2-inch grip, then attach grip to any lower guy, 6 feet from anchor. Hook 3/4-ton chain hoist to the anchor and dynamometer.

f. Tighten with chain hoist until dynamometer indicates 600 to 650 pounds.

g. Loosen cable turnbuckle slowly until no further change is indicated by the dynamometer.

h. With dynamometer indicating 600 to 650 pounds, tighten turnbuckle until the indicated value is reduced.

i. Repeat steps e through h on the remaining lower guys.

j. Check tower for twist by sighting diagonally across legs.

k. If tower is twisted, loosen turnbuckles on the four upper guys, preventing tower from untwisting.

l. Repeat steps e through h on the four upper guys that will correct the twist. Check twist after tightening each guy. When the twist disappears, tighten the opposing guy; then continue in opposing pairs until all eight guys have been tensioned.

4.7 200-FOOT INSTRUMENTATION TOWER

The 200-Foot Instrumentation Tower is located at the Instrumentation Building south of the VAB. To maintain this tower in a vertical position, the following procedure is used in conjunction with the preventive maintenance instructions for the tower, IB-502-001.

a. With transit, check tower for perpendicular from two locations 90 degrees (approx) apart.

- b. Assemble testing fixture on the three bottom guys as shown in figure 4-2.
- c. Apply hydraulic pressure to jacks by pumping until calibrated gage indicates value equivalent to that shown on the chart (figure 4-3) for 22,000 pounds.
- d. If tower is perpendicular, perform steps e through g. If tower is not perpendicular, perform step h.
- e. Tighten retaining nuts until they are just seated; then simultaneously tighten retaining nuts in small, equal increments until indicated pressure begins to reduce.
- f. Proceed to center guys and repeat steps b, c (using 39,600 pounds), and e.
- g. Proceed to top guys and repeat steps b, c (using 39,000 pounds), and e.
- h. Loosen tension of guys on side toward which tower is leaning by simultaneously loosening retaining nuts in equal, small increments; then tighten guys on opposite side of tower until tension on all guys returns to normal. Repeat, if necessary, until tower is perpendicular.

4.8 300-FOOT RADIO ANTENNA

The 300-Foot Radio Antenna is located adjacent to the Communications Maintenance and Storage Building (M6-791) in the industrial area of KSC. To maintain this antenna in a vertical position, the following procedure is used in conjunction with the preventive maintenance instructions for the antenna, CM-502-001.

- a. With transit, check antenna for perpendicular from two locations 90 degrees (approx) apart.
- b. Set dynamometer to zero (small adjusting screw in bottom).
- c. Assemble testing equipment on one of the bottom guys as shown in figure 4-4.
- d. If tower is perpendicular, perform steps e through j. If tower is not perpendicular, perform step k.

TO BE SUPPLIED

Figure 4-2. Test Fixture-Guywire Setup for 200-Foot Tower.

TO BE SUPPLIED

Figure 4-3. 200-Foot Tower Guywire Pressure Chart.

TO BE SUPPLIED

Figure 4-4. Test Fixture-Guywire Setup For 300-Foot Tower.

- e. Tighten testing turnbuckle until dynamometer indicates value shown on figure 4-5 for that level.
- f. Loosen guy turnbuckle until no further change is indicated by the dynamometer.
- g. With dynamometer indicating appropriate value, as indicated on figure 4-5, tighten guy turnbuckle until this value is reduced.
- h. Repeat steps c through f for the other guys of the same level.
- i. Repeat steps c through g for guys of the other levels.
- j. If tower is twisted, loosen the three top guys preventing tower from untwisting.
- k. Repeat steps c through f for the three top guys that will correct twist. Check twist after tightening each guy. When twist disappears, tighten an opposing guy; then continue tightening in opposing pairs.
- l. Loosen guys on side toward which tower is leaning and tighten guys on opposite side of tower. When tower is nearly perpendicular, repeat steps c through h, correcting the lean in small increments.

4.9 500-FOOT WEATHER TOWER

The 500-Foot Weather tower is located off Happy Creek Road south of the Beach Highway. To maintain this tower in a vertical position, the following procedure is used in conjunction with the preventive maintenance instructions for the tower, MZ-500-001.

- a. Procedure to be supplied later.

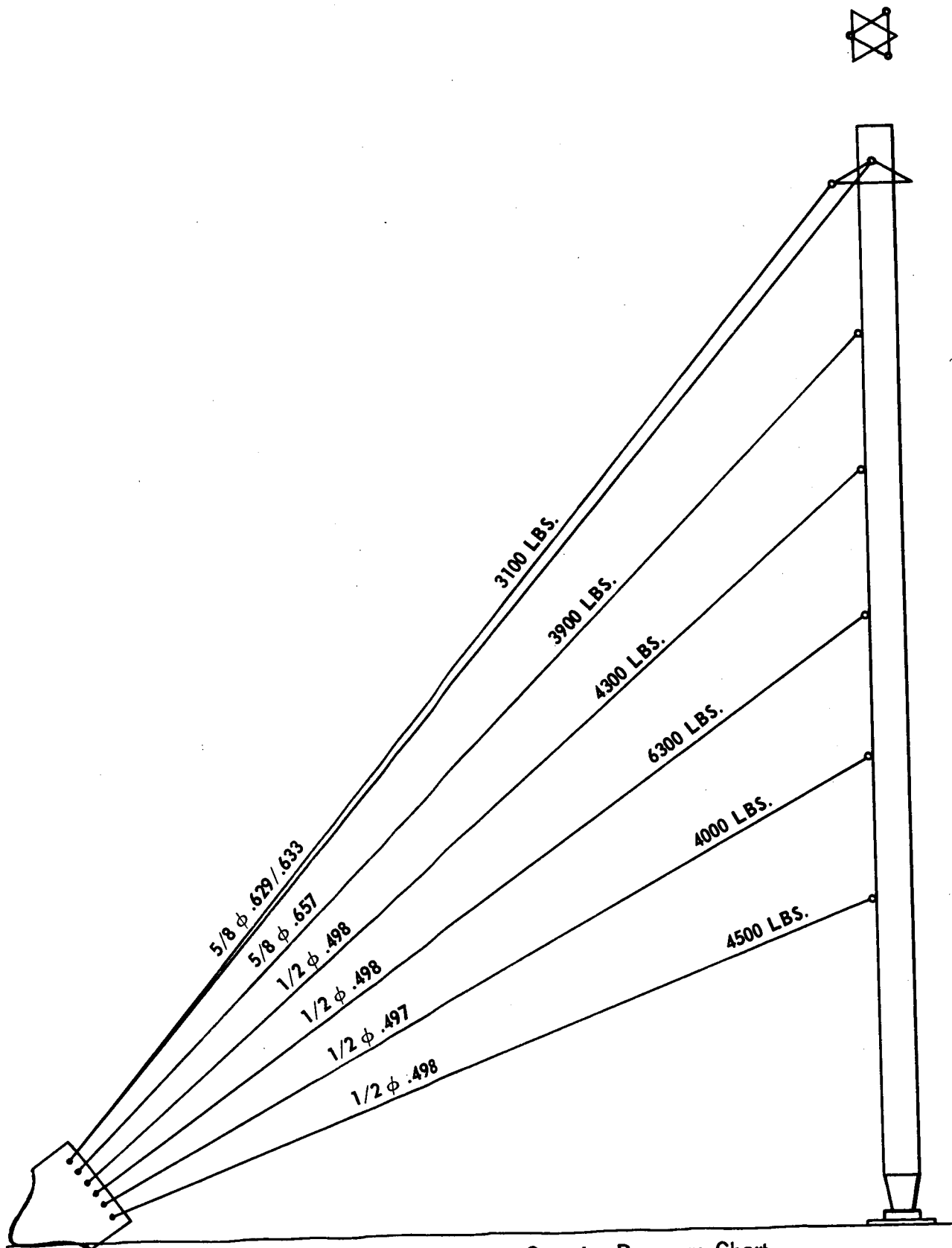


Figure 4-5. 300-Foot Antenna Guywire Pressure Chart.

SECTION V MAINTENANCE PLAN FOR LAUNCH COMPLEX 39 AND THE FLUID TEST COMPLEX

5.1 PURPOSE

This procedure implements the Maintenance Plan for Launch Complex 39 (LC-39) and the Fluid Test Complex.

5.2 GENERAL

The Maintenance Plan was developed to outline the procedures, methods, techniques, and documentation to be utilized in the implementation of specific Base Operations Division/ Base Support Services Contractor (BOD/BSSC) responsibilities at LC-39 and the Fluid Test Complex. The specific parameters delineating responsibility and responsive action are contained in the following publications:

1. BOD/LSOD Agreement Covering Management of Mission Facilities KSC, dated 30 October 1964
2. Preventive Maintenance Procedure
3. Interim Painting Schedule, dated 28 October 1964
4. Warranty Procedure
5. Production Control
6. BSSC Maintenance and Operations (M & O) Internal Interface Document

5.3 PROCEDURE

The Maintenance Plan for LC-39 and the Fluid Test Complex is to be implemented in its entirety and intent for the areas concerned. Implementation will sequentially occur with the acceptance of new facilities, buildings, and structures and with the assignment of associated responsibilities to the BOD/BSSC Contractor. Functional responsibilities and responsive action will be in accordance with the referenced documentation (paragraph 5.2).

5.3.1 ROUTINE OPERATIONS. The Maintenance Plan is applicable to routine operations in the LC-39 and Fluid Test Complex. The plan is based on an

orderly expansion and extension of the Maintenance and Operations Program developed for use in the KSC Industrial Area. Functional responsibilities of the various operating sections within the KSC Industrial Area will also apply to the LC-39 and Fluid Test Complex but must be pursued within the limits and guidelines that are established by interface documentation. Both areas encompassed by the Maintenance Plan are subject to joint operations by the several construction, support, and stage contractors. Functional responsibilities must be governed by established interface agreements and their detailed development and expansion under the delegated mission management organization for LC-39 and the Fluid Test Complex. The following Sections are affected by the Maintenance Plan for LC-39 and the Fluid Test Complex:

1. Shops and Field Services
2. Utilities
3. Heavy Equipment
4. Roads and Grounds
5. Production Engineering

5.3.2 LAUNCH TEST SUPPORT OPERATIONS. The Maintenance Plan is applicable to Launch Test Support Operations, although operational schedules shall take precedence over the Maintenance Plan. All work performed under the plan will be accomplished on a noninterference basis or as part of an operational schedule for facility refurbishment. Functional operations during launch test activities will be governed by certain control documents, Integrated Support Plan and Countdown Documents, and the Launch/Test Controller. It will be necessary to implement the Maintenance Plan to effectively activate and validate facilities, systems, and equipment in support of launch test programs. The order of priority for executing the plan depends upon the importance and criticality of the responsibilities involved.

5.4 DEFINITIONS

The definitions shown in paragraphs 5.4.1 through 5.4.3 shall apply to the terms used in the Maintenance Plan.

5.4.1 BRICK AND MORTAR. The term brick and mortar pertains to all physical parts of structures essential to the operation of the building, including the following:

1. Water Systems
2. Sewage and Waste Systems
3. General Lighting
4. Personnel Sanitary Areas
5. Plant Air Systems
6. Air Conditioning Systems
7. Fire Water and Alarm Systems

Systems that are mission oriented or pertain to critical phases of vehicle/spacecraft checkout, assembly, and testing are specifically excluded from this definition.

5.4.2 LAUNCH COMPLEX 39. The term Launch Complex 39 pertains to all structures within the area as defined in paragraph IV.B.I. of the LSOD/BOD Interface Agreement. The following are also considered structures to be included within this definition:

1. Vehicle Crawler
2. Launch Umbilical Towers
3. Arming Tower

5.4.3 FLUID TEST COMPLEX. The term Fluid Test Complex pertains to all structures within the area as defined in paragraph IV.C.I.b. of the LSOD/BOD Interface Agreement. Buildings which have been accepted for beneficial occupancy and which are presently maintained by BOD include:

1. M7-355 - Manned Space Operations
2. M7-505 - Spacecraft Spares and Equipment
3. M7-657 - Parachute
4. M7-867 - RF Systems Test
5. M7-1061 - Fluid Test Support
6. M7-1162 - Sewage Treatment
7. M7-1210 - Hypergolic Test No. 2
8. M7-1212 - Hypergolic Test No. 1
9. M7-1410 - Cryogenic Test No. 2
10. M7-1412 - Cryogenic Test No. 1
11. M7-1417 - Ordnance Lab
12. M7-1469 - Pyrotechnic Installation
13. M7-1472 - Ordnance Storage

5.5 PLAN

The Maintenance Plan for brick and mortar facilities in the LC-39 and Fluid Test Complex areas consists of several interrelated functions. Line supervision and engineering personnel will make periodic inspections of all structures, equipment, and grounds within BOD areas of responsibility. Deficiencies will be documented and appropriate corrective action taken. LC-39 operational schedules will take precedence over the Maintenance Plan, and all work performed under this plan will be performed on either a noninterference basis or as a part of an operational schedule for facility refurbishment.

5.6 PREVENTIVE MAINTENANCE

The preventive maintenance procedures for all assigned buildings, structures, and systems are described in Preventive Maintenance Program Volume II.

5.6.1 SEQUENCE. Standing work orders are issued to authorize performance of preventive maintenance. Preventive maintenance instructions are issued periodically to maintenance departments by Production Control. These instructions will serve as authority to perform work. After task accomplishment, the completed Preventive Maintenance Instruction (PMI) is returned to Production Control for review and then forwarded to Area Engineers to be reviewed for technical adequacy, frequency, and completeness. In addition, recommendations are made for entries in historical records.

5.6.1.1 Major and Minor Breakdown Report. In addition to the preventive maintenance sequence as outlined in paragraph 5.6.1, a system for providing major and minor breakdown repair work has been established and includes the following:

1. Authorization for minor repairs limited in man hours and material
2. Special work orders for repairs as required (Refer to Production Control Volume I.)

5.6.2 FILES. Appropriate equipment and structure files are maintained for the purpose of providing historical records, status, and reference. In addition, master and submaster files of Master Equipment Record Cards and Preventive Maintenance Instructions are maintained.

5.6.3 SPARE PARTS. To ensure continued performance of all equipment and facilities, spare parts will be provisioned in accordance with the established spare parts program, which includes:

1. Determining requirements
2. Establishing maximum levels
3. Provisioning
4. Cataloging

5.6.4 SURVEILLANCE. The execution of the procedure described in paragraph 5.6.3 includes surveillance by foremen of work accomplished by mechanics; the entire procedure is monitored and evaluated by qualified engineers. Scheduling and record control is maintained by the Production Control group.

5.7 WARRANTY PROCEDURE

The functional failure of any U.S. Government owned BOD/BSSC maintained and operated facility and equipment requires the establishment of a warranty procedure. This procedure will ensure that defects are corrected within a minimum amount of time and expense to the government. An established warranty procedure is being utilized by the BOD/BSSC Contractor within the assigned areas of responsibility. The procedure provides for the assignment of responsibilities and functions to personnel best qualified to implement, monitor, and evaluate performance. This procedure includes the LC-39 and Fluid Test Complex areas. (Refer to Warranty Procedure Volume I.)

5.7.1 IMPLEMENTATION. The implementation procedure includes the following:

1. Warranty Periods - Beneficial occupancy dates, manufacturers' warranties, physical inspection
2. Monitoring of Warranted Items - Investigation of defects, initiation of corrective action, coordinate documentation
3. Warranty Records and Instructions - Base operations warranty report, warranty log, support request (initiates special work orders), and special work order. The maintenance crafts record failures or substandard performance that result from defects covered by the builder/manufacturers' warranty. Technical investigation and evaluation will then be provided by engineering personnel. The responsible engineer determines the extent of damage and initiates corrective action with appropriate documentation through the BOD Warranty Coordinator. Followup is provided to ensure completion of corrective action. The builder/manufacture will be informed when defects occur. Corrective action will be based on degree of urgency, warranties, recommendations, and approved technical recommendations. All items on which warranties are exercised will be completely documented to relieve the government of possible liability.

5.8 PAINTING SCHEDULE

A painting schedule program has been prepared for the BOD maintenance facilities and is currently being employed within designated areas of responsibility. An expanded program is being developed and implemented in the LC-39 and Fluid Test Complex areas. Each facility is physically surveyed to record the painted surfaces and colors used. The Painting Schedule (Refer to Facilities and Equipment Painting Volume II.) is prepared to include, in addition to existing data, new requirements for painting specifications and colors, the type of primer to be used, and the frequency of inspection and painting necessary to maintain the facility at an acceptable level. Special items of consideration are also denoted for each facility.

5.8.1 SPECIAL APPLICATION. Paint schedules are being developed for special application in the LC-39 and Fluid Test Complex areas. These special items of consideration include, but are not limited to, the following:

1. Sandwich metal siding on the Vertical Assembly Building (VAB) and other buildings
2. Special purpose doors
3. Crawler-Transporter
4. Mobile Launchers
5. The Mobile Service Structure
6. The VAB structural steel

These painting schedules will become an integral portion of the overall maintenance plan.

5.9 SPECIAL WORK ORDERS

The Maintenance Plan provides for correction of specific deficiencies that may occur although the plan is functioning as intended. These deficiencies will be corrected efficiently through utilization of one or more of the methods as described in paragraphs 5.9.1 and 5.9.2.

5.9.1 WORK ORDERS. The work order system, which is presently being utilized, has been broadened to include necessary work to be accomplished in the LC-39 and Fluid Test Complex areas. (Refer to Production Control Procedure Volume I.) The BOD Work Control Desk processes work requests and incorporates them into the appropriate task schedule. Engineering and estimating tasks are performed by the Production Engineering Department of the BOD Contractor. Work scheduling is accomplished by the Production Control Unit of the BOD Contractor. The work can then be performed by one of the operating craft departments of the BOD Contractor. In situations not requiring detailed engineering and estimating, the work will be accomplished by submitting the Work Order Authorization through Shop Estimating and Production Planning to the appropriate work supervisor. It shall be noted that all work order documents must be estimated; however, only those requiring technical investigation and determination will be processed through engineering.

5.9.2 TROUBLE CALLS. The Maintenance Plan provides for prompt response to minor deficiencies that require immediate attention. A central telephone

will be provided, and the Trouble Call Clerk in attendance will take the call and prepare a work authorization in accord with Production Control Procedure Volume I. Trouble calls will be restricted to work which requires three hours or less and which can be accomplished with readily available material.

5.10 EQUIPMENT

Essentially the same Maintenance Plan that is applied to Brick and Mortar facilities is followed for collateral equipment for which the BOD/BSSC Contractor has maintenance and operation responsibility.

5.10.1 IMPLEMENTATION. The following procedures and schedules apply to equipment when assigned:

1. Preventive Maintenance Procedure
2. Warranty Procedure
3. Painting Schedule
4. Lubrication Specification (Lubrication Procedure Volume II)

All of the preceding are operative throughout KSC where BOD has been designated the responsible organization. The implementation and operation of the equipment maintenance procedures and schedules are handled in the same manner as facilities. Inspection, technical evaluations, monitoring, and followup are all conducted within established organization and methods. The same types of documentation described elsewhere in this document will be utilized for the equipment maintenance plan.

VOLUME 6
SECTION VI
SYSTEMS VALIDATION PROCEDURES

NOTE

Information for this section was not available for publication at this time. When this section is available, copies will be forwarded to recipients of this manual.

SECTION VII LOW VOLTAGE POWER DISTRIBUTION AND LIGHTING

7.1 PURPOSE

This section establishes procedures to obtain services for the Low Voltage Power Distribution System (480 volts and under, 60 cycles) and Lighting Systems. It also redefines responsibilities as outlined in the BOD/LSOD Interface Document (Vol. 1, Sect. II).

7.2 GENERAL

This section is supplemental to the Interface Document. This document is applicable to Launch Complex 39, Spacecraft Checkout Areas, Industrial Areas, and the Central Instrumentation Facility. Procedures contained in this section apply to the Base Operations Division (BOD) and all procedures applicable to the Launch Support Operations Division (LSOD) are referenced.

No procedures applying to Preventive Maintenance Inspections are contained in this section. Preventive Maintenance Instructions are covered in Volume 2, Section I.

7.3 LAUNCH COMPLEX 39 AND SPACECRAFT CHECKOUT AREAS

7.3.1 LOW VOLTAGE POWER DISTRIBUTION SYSTEM. The distribution of low voltage power (480 volts and under, 60 cycles) is the responsibility of LSOD (refer to the BOD/LSOD Interface Document). BOD will support LSOD on request with repair and construction services. LSOD will forward a completed Support Request KSC Form 19-15, or a Base Support Services Work Authorization, KSC Form 26-1, to BOD, requesting the services needed. LSOD shall coordinate all repairs or construction and shall supply BOD with access to any load center, panel, or area necessary to complete the work orders assigned to BOD.

BOD shall have operational access to and operational responsibility for switchgear and devices that are part of the control systems of load devices assigned to BOD. This includes operation of circuit breakers, where the circuit breaker is part of the control or isolation system (including all components of the connected load). Work orders requesting BOD support will be channeled through the Base Support Services Contractor's (BSSC) Production Control Unit. This Production Control Unit will issue the work order to the applicable Maintenance and Operations Section for action. BSSC's production engineering will be consulted when the need for engineering assistance occurs.

7.3.2 BUILDING AND GENERAL AREA LIGHTING. The maintenance of building and general lighting is the responsibility of BOD. This responsibility includes the operation of the control or isolation circuit breakers, fixture repair, lamp replacement, lamp and fixture cleaning, circuit maintenance, and additions or modifications of lighting systems.

The replacement of lamps that have failed or are failing in the interior of buildings will be the responsibility of the assigned area maintenance mechanics of the BOD Shops and Field Services. The lamps will be replaced when the scheduled preventive maintenance inspection is accomplished. The building occupant may initiate a work order to have the failed or failing lamps replaced. When the lamps that are installed attain a 70% to 85% of their rated life, they will be replaced by the BOD Shops and Field Services on a group relamp effort.

A fixture cleaning effort will be conducted simultaneously with the group relamping effort. Fixtures will be vacuumed to remove internal and external accumulations of dirt and dust to ensure maximum ballast life. Louvers, lenses, and reflectors will be washed to achieve maximum light output from all fixtures.

The relamping of traffic signals, street lights, parking area lights, and other outdoor area lights will be accomplished by the BOD Utilities-High Voltage Section. The fixtures will be cleaned as specified during this relamping effort.

Building occupants and users may request relamping, modification, maintenance, or additions to the Lighting System. These requests will be submitted to Support Request, KSC Form 19-15, or Base Support Services Work Authorizations, KSC Form 26-1. These request forms will be transmitted to the BSSC's BOD Production Control Section, where scheduling, ordering of necessary material, and the issuing of work orders to the Shops and Field Services Section for appropriate action will take place.

7.3.3 SPECIAL LIGHTING. Special lighting is defined as lighting required in photography, television, and any other high intensity lighting system. LSOD has complete responsibility for the operation, maintenance, and storage of lighting systems in this category (refer to the BOD/LSOD Interface Document). All requests for Special Lighting Systems will be submitted to LSOD on a Support Request, KSC Form 19-15, or on a Base Support Services Work Authorization, KSC Form 26-1. These requests are then processed by LSOD in accordance with its current directives.

7.4 INDUSTRIAL AREA AND CENTRAL INSTRUMENTATION FACILITY

7.4.1 LOW VOLTAGE POWER DISTRIBUTION SYSTEM. In the Industrial Area and the Central Instrumentation Facility, BOD has complete responsibility for the low voltage power distribution (480 volts and under, 60 cycles) system. To maintain this responsibility, a Preventive Maintenance Program is in effect to keep the power distribution system in a "factory serviced" condition. (Refer to Preventive Maintenance Procedures, Vol. 2, Sect. I.)

All work requests for modifications, repairs, additions, and construction of the Low Voltage Power Distribution System will be submitted to BOD on Support Requests, KSC Form 19-15, or Base Support Services Work Authorization, KSC Form 26-1. These work requests will be channeled through BSSC's BOD Production Control Section. The Production Control Section will schedule the job, order the necessary material, and issue the work order to the Shops and Field Services Section for action. The BSSC Production Engineering Section will be consulted when the requirements for engineering assistance occur.

Emergency repairs and adjustments will be handled by a trouble call procedure. In this procedure, a person noticing the need for action will notify the trouble call desk clerk in that area. The trouble call desk clerk will initiate a Field Work Order, KSC Form 7-103. This work order will be routed through the Production Control Section to the Shops and Field Services Section for action. Production Engineering Section will be consulted when a need for engineering assistance arises.

There are three trouble call desks. One of these trouble call desks is located in the KSC Headquarters Building (M6-399) and services that building, Central Instrumentation Facility (M6-342) and Operations Building (L7-1557), Base Operations Building (M6-339), Communications Distribution and Switching Center (M6-138), Corps of Engineers Building (M6-336), and the Auditorium and Training Facility (M7-351). This trouble call desk serves these buildings during the hours of 0730 to 1600 daily, except weekends and holidays.

A second trouble call desk is in the Spacecraft Supply and Equipment Building (M7-504) and serves the Manned Spacecraft Operations and Checkout Areas (M7-355) during the hours between 0730 and 1600 daily, except weekends and holidays. The third trouble call desk located in the Base Support Building (M6-486) serves all other areas not previously mentioned, excepting LC-39, during the hours of 0730 to 1600 daily. Between the hours of 1600 and 0730 and on weekends and holidays, this trouble call desk serves all areas.

7.4.2 BUILDING AND GENERAL AREA LIGHTING. The maintenance of building and general area lighting is the responsibility of BOD. The procedures

enumerated for the Low Voltage Power Distribution System (paragraph 7.4.1) apply to the Building and General Area Lighting Systems.

7.4.3 SPECIAL LIGHTING. Special lighting in the Industrial Area and the Central Instrumentation Facility is the responsibility of BOD. All requests for service and maintenance will be handled the same as the Low Voltage Power Distribution System (paragraph 7.4.1).

SECTION VIII PORTABLE POWER GENERATION

8.1 PURPOSE

To establish a procedure for requesting and providing portable generators in support of the portable generator power requirements at Kennedy Space Center; and to delineate responsibility.

8.2 GENERAL

This procedure applies to all facilities and equipment within the confines of the Kennedy Space Center that require power from portable generators. The phases covered by this procedure include the request, delivery, connection, disconnection, and return of the portable generator.

8.3 PROCEDURE

8.3.1 REQUEST. Portable generators will be requested in accordance with the Production Support Procedure and the Emergency Power Manual. Emergency portable generator requirements may be filled by calling the Maintenance and Operations Trouble Call Desk. The Trouble Call Desk will then initiate a support request in accordance with the Emergency Equipment Procedure.

8.3.2 DELIVERY, SERVICE, OPERATION, AND RETURN. The following steps will be performed:

a. Upon receipt of the Work Order Authorization (KSC Form 6-1), the Base Support Services Contractor (BSSC) Heavy Equipment Section will deliver the portable generator to the required area.

b. The BSSC Heavy Equipment Section will service the prime mover (engine) in accordance with the Preventive Maintenance Instruction and operate the generator in accordance with portable equipment engine operation procedures to be supplied by the BSSC Heavy Equipment Section.

c. Upon completion of the portable power requirement and after the generator has been disconnected, the BSSC Heavy Equipment Section will return the equipment to the Heavy Equipment Storage area.

8.3.3 CONNECTION AND DISCONNECTION. The responsibility for connecting and disconnecting portable generators is defined below.

8.3.3.1 Permanent Industrial Area Facilities. The BSSC High Voltage Section is responsible for making the power connection, ensuring proper phase rotation, and double checking voltage requirements prior to operation of the equipment. Upon completion of the portable power requirement, the generator will be disconnected by the BSSC High Voltage Section.

8.3.3.2 Temporary Industrial Area Facilities. The BSSC Low Voltage Section is responsible for making the power connection, ensuring proper phase rotation, and double checking voltage requirements prior to operation of the equipment. Upon completion of the power requirement, the generator will be disconnected by the BSSC Low Voltage Section.

8.3.3.3 Spacecraft Checkout Area. The Launch Support Services Contractor (LSSC) Low Voltage Section is responsible for making the power connection, ensuring proper phase rotation, and double checking voltage requirements prior to operation of equipment. The BSSC High Voltage Section is responsible for operating the load breaker switch (13.2 kv oil-filled unit) or the main air breaker switch at the unit substation, when facilities have not been provided with an outside generator junction box. The BSSC Low Voltage Section will check the generator connection, verify that the generator is not operating in an overload condition, and make certain that all phases are balanced. Upon completion of the portable power requirement, the generator will be disconnected by the LSSC Low Voltage Section.

8.3.3.4 Launch Complex 39 Area. The LSSC Low Voltage Section is responsible for making the power connection, ensuring proper phase rotation, and double checking voltage requirements prior to operation of equipment. The BSSC Low Voltage Section will check the generator connection, verify that the generator is not operating in an overload condition, and make certain that all phases are balanced. Upon completion of the portable power requirement, the generator will be disconnected by the LSSC Low Voltage Section.

8.3.4 SPECIAL CASES. In special cases, generators may be obtained from the AFETR Contractor (Pan American Airways) or rented from an outside vendor. In such cases, the generators will be delivered by the contractor or vendor, who will also connect, operate, and disconnect the generators in accordance with this procedure. The generator connections will be inspected by the specific Section electricians in accordance with paragraph 8.3.3.

VOLUME 6

SECTION IX

JANITORIAL AND AREA SERVICES PLAN

NOTE

Information for this section was not available for publication at this time. When this section is available, copies will be forwarded to recipients of this manual.

VOLUME 6

SECTION X

SHOP AND FIELD ENGINEERING MANUAL

NOTE

Information for this section was not available for publication at this time. When this section is available, copies will be forwarded to recipients of this manual.

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NOTICE

To holders of TM-431-TWA

This is Section IX of Volume 6
and is to be inserted in proper sequence.

1. REMOVE the following pages:
 - (a) Section Title Page for this section
 - (b) NOTE page for this section
2. INSERT this new section in the proper place.

SECTION IX JANITORIAL POLICY AND PROCEDURES

9.1 PURPOSE

This section sets forth janitorial service requirements, establishes policy, and provides procedures for the accomplishment of janitorial services at KSC.

9.2 GENERAL

The Base Support Services Contractor (BSSC) is responsible for administering an efficient and comprehensive Janitorial Program in support of KSC operations. Janitorial services are provided by the BSSC through a subcontractor (currently: Aircraft Service Janitorial, Inc). BSSC management administers the program through the Facilities Maintenance Area Services Section of the Maintenance and Operations (M & O) Department.

9.3 ORGANIZATION

The Area Services Group consists of all elements necessary to complete the janitorial requirements.

9.3.1 BSSC ELEMENTS. The following is a list of BSSC organizational elements:

1. Facilities Maintenance Superintendent
2. Area Maintenance and Services Assistant Superintendent
3. Area Services Foreman-In-Charge and Staff
4. Area Services Foreman
5. Supply Clerks
6. Specialist Cleaners

9.3.2 SUBCONTRACTOR ELEMENTS. The following is a list of subcontractor organizational elements:

1. Administrator
2. Janitor Manager and Staff
3. Janitor Shift Supervisors
4. Janitor Foreman
5. Janitor, Leads
6. Janitor, Technical
7. Janitor, Maids
8. Janitor (JAT)

9.4 RESPONSIBILITIES

9.4.1 SUPERINTENDENT OF FACILITIES. The Superintendent of Facilities Maintenance is responsible for the Area Services Section and delegates the management and operation of the program to the Assistant Superintendent of Area Maintenance and Services.

9.4.2 ASSISTANT SUPERINTENDENT. The Assistant Superintendent has full authority to direct and coordinate all elements of the Janitorial Program.

9.4.3 BSSC FOREMAN-IN-CHARGE OF AREA SERVICES. The BSSC Foreman-In-Charge of Area Services is responsible for issuing authorized work orders, cleaning schedules, and assignments to the Janitorial Subcontractor.

9.4.4 BSSC AREA SERVICES FOREMEN. The BSSC Area Services Foremen monitor the janitorial performance and ensure timely response, quality work, manpower control, and economy of operation.

9.4.5 JANITORIAL SUBCONTRACTOR. The Janitorial Subcontractor is responsible for the management and training of janitor manpower and supervision to accomplish the janitorial work assigned by the BSSC.

9.5 POLICY

Work performance is scheduled to avoid insofar as possible conflict with operations and to provide maximum service with maximum efficiency. The execution of an effective program requires support from all agencies and organizations receiving service. A special janitorial request, except for emergencies, should be made at least 1 day prior to need. All matters pertaining to janitorial service, including suggestions, complaints, and recommendations, should be forwarded to: BSSC Foreman-In-Charge, Area Services. Requests for additional services are to be to: NASA Chief, Area Services, SOP-2235, or his Area Representative.

9.6 PROGRAM CONCEPTS

9.6.1 BUILDINGS AND FACILITIES. The Janitorial Program for buildings and facilities is divided into two basic categories of services, Typical and Nontypical, utilizing three separate classifications of labor: Special, Technical, and General Janitorial. Service Classes 1, 2, and 3 represent corresponding frequencies of service related to specific areas.

9.6.1.1 Typical Services. The term Typical applies specifically to Class 2 service performed in areas requiring routine janitorial services. This includes cleaning of floors, walls, furniture, restrooms, and appurtenances, utilizing Janitorial Cleaning Schedules for routine daily performed tasks and scheduled work.

9.6.1.2 Nontypical Services. The term Nontypical applies to any janitorial service not performed in Typical Janitorial Services. Nontypical services include: Class 1 services performed in support of extra clean operations, high frequency service, demand service, special request service, extra services because of special conditions, Class 3 services performed in limited and restricted service areas, and un-anticipated contingencies.

9.6.1.3 Special Labor. Specialist cleaners performed specialized cleaning services that are beyond the general scope of work or that require more than common janitorial skills. Specialized cleaning areas consist of high-level VIP offices, Astronaut Quarters, Clean and/or White Rooms, and other designated specialized areas.

9.6.1.4 Technical Labor. Technical janitors utilize common janitor skills but are required to use extraordinary care and attention. Technical cleaning areas consist of Equipment Rooms, Computer Rooms, Test Cells, Workstands, Laboratories, and Electrical and Communication Rooms.

9.6.2 **UNITS OF WORK AND WORK AREAS**. Units of work and work areas are established as a result of onsite surveys and an inventory of each facility. The following typed form (Figure 9-1) is used to establish the area and the unit of work per item. The size of each unit is based on a full-time assignment for one man or a number of man-hours per functioning operation. The size of the units and the manpower requirements for the areas of assignment for Typical Routine Janitorial Services are predicated on the following information.

9.6.2.1 **Established Manpower Standard Times**. The standard times listed herein are estimates for an average situation. The figures must be considered as guides only because of the many variables affecting the performance time of housekeeping jobs. Some of the variables are:

1. The Worker -

Ability to work with others	Manual dexterity
Age	Morale
Attitude	Motivation and incentive
Experience	Physical strength and build
Fatigue	Quality of supervision
Health and Limitations	Training
Intelligence	

2. The Surface to be Cleaned -

Condition of subsurface (level, smooth, etc)	Total area involved
Condition of surface (smoothness, porosity, etc)	Traffic
Degree of soil	Type of soil

FACILITY ONSITE SURVEY AND INVENTORY SHEET

BUILDING # _____ FLOOR _____ AREA _____ DATE _____

ITEM	QUANTITY	UNIT	ITEM	QUANTITY	UNIT
<u>FLOORS</u>			<u>OFFICE FURNITURE (Cont)</u>		
Vinyl Asb.			Cabinets, Storage		
Concrete			Waste Receptacles		
Terrazzo			Ash Trays		
Ceramic Tile			Telephones		
Linoleum			Desk Lamps		
Wood			Pencil Sharpeners		
Carpet			Book Cases		
Other, _____			Black Boards		
<u>WALLS</u>			Credenzas		
Plaster			Coat Racks		
Concrete			Bulletin Boards		
Ceramic Tile			Picture Frames		
Mahogany - Wood			Other, _____		
Fabric			<u>SPECIAL FURNITURE</u>		
GSA Part.			Chairs		
Other, _____			Desk		
<u>OFFICE FURNITURE</u>			Divans		
Desks			Other, _____		
Tables			<u>APPURTENANCES</u>		
Chairs			Clear Glass, Interior		
Chairs, Type _____			Windows, Inside		
Cabinets, Filing			Windows, Outside		

Figure 9-1. Survey and Inventory Sheet (Sheet 1 of 2)

FACILITY ONSITE SURVEY AND INVENTORY SHEET

BUILDING # _____ FLOOR _____ AREA _____ DATE _____

ITEM	QUANTITY	UNIT	ITEM	QUANTITY	UNIT
<u>APPURTENANCES (Cont)</u>			Dispensers		
Window Ledges			(Towels)		
Venetian Blinds			(Soap)		
Drapes			(Seat)		
Doors - W/Glass			(Tissue)		
Doors - Plain			(San Napkin)		
Diffusers/Grills			Showers		
Fire Hose Cabinets			Lockers		
Drinking Fountains			<u>STAIRWAYS</u>		
Coolers, Bottled Water			Flights		
Vending Machines			Landings		
Urns, Wall			Floor Type		
Urns, Floor			<u>ELEVATORS</u>		
Door Kick/Push Plates					
<u>REST ROOMS</u>					
Urinals					
Toilets - Commodes					
Wash Basins					
Mirrors					

Figure 9-1. Survey and Inventory Sheet (Sheet 2 of 2)

3. Density of area

Population

Equipment

4. Work Conditions -

Amount of obstruction

Attitude of other employees

Comfort level

Desired quality of result

Distance to custodial facilities

Evaporation rate

Illumination intensity

Method of performing the work

Presence of other employees

Quality of materials being used

Type, size, and conditions of equipment being used

The standard times are developed on the assumption that all factors indicated above are at an average level, a condition almost impossible to achieve in practice. As the Janitorial Program develops, the time requirements for various jobs will lessen. It would be necessary to make time studies to establish rates for a specific situation. Specific time studies may be found to vary as much as 50 percent with respect to given estimates. Where figures are given in ranges, the variability is even more pronounced. Average time estimates that have been compiled and listed on a Standard Times Data Sheet are as follows.

STANDARD TIMES

COMPREHENSIVE JOBS

(These average time estimates include setup and put-away time and assume reasonable mechanization)

Administrative, Office, and Similar Areas

Work load, sq ft per 8-hour day

Maintenance level Desired	Degree of Obstruction				
	None	Slight	Medium	Med Hvy	Heavy
Standard	14,000	10,000	8,000	7,000	6,000
Above Standard	13,000	8,750	7,000	6,125	5,250
High	11,000	7,500	6,000	5,250	4,500
Very High	10,000	6,250	5,000	4,500	4,000

Washrooms, Locker Rooms, and Related Areas

Work load per 8-hour day

Swing & Locker rooms (incl damp mopping)	15,000 - 18,000 sq ft
Swing & Locker rooms (no damp mopping)	17,000 - 20,000 sq ft
Toilet rooms in office areas	120 fixtures (basins, commodes, urinals)

Toilet rooms in plant area	107 fixtures
Toilet rooms (alternate estimate)	3,000 - 4,000 sq ft

General Cleaning Operations
Work load per 8-hour day

Elevators, freight (no damp mopping)	24 elevators
Elevators, passenger (incl. damp mopping)	24 elevators
Overhead office areas (dusting & vacuuming)	7,000 - 10,000 sq ft
Stairs (sweeping treads, dusting handrails)	60-12 ft flights
Stairs (mopping & rinsing)	45-12 ft flights
Storage & Supply areas (sweeping floors, dusting horiz)	40-60,000 sq ft
Unobstructed areas (manual sweeping)	60-80,000 sq ft
Unobstructed areas (power sweeping)	400-600,000 sq ft

Policing Operations
Work load per 8-hour day

Lobbies and corridors	20,000 sq ft
Stairs	180 flights
Swing & Locker rooms	45,000 sq ft
Toilet rooms in plant areas	320 fixtures

General Cleaning Operations
Time per operation

Wash cafe chair	36 sec	Wax or polish, partition, 1 ft	90 sec
Dust classroom, (40 desks)	5 min	Wash cafe, table	90 sec
Clean & wax desk or table	10 min	Wash trash can	4 min
Strip & rewax desk or table	15 min	Vacuum & wash drop light	3.3 min
Wash desk or table	6 min	Vacuum & wash fluorescent light	5.9 min
Wash glass desk top	115 sec	Wash receptacle, large, empty	30 sec
Refill napkin dispenser	90 sec	Wash receptacle, small, empty	15 sec
Refill soap dispenser	60 sec	Windows, washing, typical	40-60 windows
Refill towel dispenser	90 sec		
Dust executive office	3 min		
General off, dusting 1,000 sq ft	12 min		

Maintenance Operation	Floors				
	Minutes per 1,000 square feet				
	Degree of Obstruction				
	None	Slight	Medium	Med Hvy	Heavy
Auto Scrubber-Vac, single pass	16-20	18-24	-	-	-
Buff, 16" single-disc machine	23	32	38	40	42
Buff, 19" single-disc machine	15	25	30	33	35
Damp mop	14	17	20	24	28
Dust mop	8	9	11	12	13
Hose and squeegee	20	25	36	40	43
Rewax (apply one coat wax only)	16	19	22	25	27
Scrub manual	75	105	120	128	135
Scrub, 16" single-disc machine	50	60	85	90	95
Scrub, 19" single-disc machine	25	30	40	43	45
Strip & rewax (two coats)	200	225	265	282	300
Sweep Administrative areas	9	11	13	15	16
Sweep plant areas	11	14	18	20	22
Vacuum carpets	20	23	29	31	35
Vacuum, dry	15	19	23	25	28
Vacuum, wet dry	29	33	37	41	45
Wet mop & rinse	32	36	40	44	48

Furnishings
Dusting, seconds per item of average size
(Double these figures for damp cleaning)

Air-conditioner unit	90	Desk trays	8	Radiator, enclosed	30
Ash tray	15	Dictator, covered	8	Sand urn	60
Book case, 36" x 40	35	Door, Flush, dust	25	Spittoon	180
Cabinet, 3' x 6'	108	Door, glassed, dust	40	Table, large	40
Calculator, covered	8	File cabinet	25	Table, medium	35
Chair, large	43	Fire extinguishers	16	Table, small	22
Chair, medium	35	Glass part, dust sq ft	1.2	Telephone	9
Chair, steno	22	Lamp, wall fluorescent	8	Telephone Switchboard	110
Cigarette stand	25	Lamp, desk fluorescent	18	Typewriter, covered	7
Clock, desk	8	Lamp with shade	35	Vending machine	60
Clock, wall	20	Mural, 3' x 5'	45	Venetian blind	210
Coat tree	15	Pencil Sharpener	15	Sofa or divan	150
Desk, large	28	Pictures, framed	15	Waste basket	16
Desk, medium	23	Rack, 6' coat & hat	90	Wall, dust, per sq ft	2
Desk, small	18	Radiator, open	180	Window ledge, per sq ft	2

<u>Wall, Ceiling, & Glass</u>			
Cleaning, seconds per item			
Door, wash both sides	150	Wall, marble, wash, per sq ft	5.5
Glass partition, clear, wash, per sq ft	8	Wall, tile, wash, per sq ft	9.0
Glass partition, opaque, wash, per sq ft	3	Wall, vaccum, per sq ft	4.7
Wall, painted, wash, per sq ft	9	Window, wash, per sq ft	7.5

<u>Rest Rooms</u>					
Cleaning, seconds per item					
Basin, incl soap disp	120	Door, spot clean	50	Receptacle, paper towel	10
Bradley basins, semicirc	180	Drinking fountain	110	Shelving, per sq ft	12
Bradley basins, circular	300	Mirror, average	30	Toilet, incl partition	180
Dispenser, napkin	13	Mirror, large	60	Urinal	120
Dispenser, paper towel	7	Wainscot, per 10"	3		

The information for the compilation of these figures was obtained from the following sources:

AFM 85-10 Custodial Services	Institutions Magazine
Advance Floor Machine Co	Lockheed Aircraft Corp
American Telephone & Telegraph Co	Modern Sanitation & Building
Assn of American Soap & Glycerin Producers	Maintenance Magazine
Buildings Magazine	National Sanitary Supply Assn
Delco-Remy Div General Motors Corp	Port of New York Authority
Factory Management & Maintenance Magazine	Post Office Dept, Buildings Management Branch
General Electric Co	School Management Magazine
Institute of Sanitation Management	Sharp & Dohme Division, Merck, Inc

The typical KSC facility has a population density that represents a degree of obstruction between medium and heavy. The overall level of maintenance desired is represented between standard and above standard as shown on the Standard Times Data Sheet.

The Typical janitorial service provided should then average 6,200 sq ft per janitor for the Typical KSC Facility. Factors beyond Typical janitorial service must be considered in reaching the desired manpower level. A few factors are as follows:

1. Transportation from assembly 14 areas to work areas
2. Cafeterias
3. Executive offices
4. Clean rooms
5. Daytime toilet servicing
6. Coffee spillage
7. Excessive trafficked areas
8. Modification and construction damage repair and trash removal

9.6.2.2. Frequency of Operations to be Performed. The various types of janitorial operations and their respective repetition frequencies are listed in Table 9-1. The frequency of each operation is in accordance with contractual specifications and has been determined by work history and experience to date. The figures in the Time column represent the number of minutes that it normally takes a man to perform a unit of the indicated operation. The legend at the end of Table 9-1 explains the meaning of the entries in the Frequency and Unit columns.

9.6.2.3 Janitorial Work Assignment Sheet. The Janitorial Work Assignment Sheet indicates where the work is to be performed, the time of day the work is to be performed, what work is to be done, the frequency of the work, the material and equipment to be used, and any pertinent instructions regarding job description, material, and/or equipment. Figure 9-2 is a sample Janitorial Work Assignment Sheet.

9.6.2.4 KSC Janitorial Schedules. Janitorial Schedules have been printed on KSC forms and provide a means of keeping a running log daily, weekly, monthly, quarterly, semiannually, and annually of operations completed. The following Janitorial Schedules can be obtained from KSC Form Control, ASO-222.

KSC Form 26-186, Floor Maintenance
KSC Form 26-186A, Wall Maintenance
KSC Form 26-186B, Appurtenances
KSC Form 26-186C, Elevators
KSC Form 26-186D, Office Furniture
KSC Form 26-186E, Rest Rooms
KSC Form 26-186F, Stairwells
KSC Form 26-186G, Overall

9.7 JANITORIAL PROCEDURE FOR NONROUTINE WORK

9.7.1 AREA JANITORIAL LOG FOR NONROUTINE WORK. To ensure coordination of janitorial trouble calls and nonroutine and special janitorial requirements the following procedure will be adhered to in all areas. Work Control Clerks shall establish a Janitorial Log which shall be utilized as outlined in this procedure.

9.7.1.1 Work Control Clerk. The Work Control Clerk shall log the following information for all trouble calls.

1. Item number and date
2. Time received
3. Building and room number
4. Description of trouble

Table 9-1. Typical Janitorial Services Frequency and Manpower Data
(Normal Class 2)

Area	Type	Operation	Frequency	Time (Minutes)	Unit
<u>1.0 Floor Maintenance</u>					
1.1 Offices, Labs, Instrument Rooms, Tech Work Areas	V/A Tile	1. Dust Mop	D	12	MSF
		2. Damp Mop	2W	24	MSF
		3. Buff (Add Finish)	W	65	MSF
		4. Recondition	M	122	MSF
		5. Strip & Rewax	S	282	MSF
	Concrete	1. Sweep	D	15	MSF
		2. Damp Mop	2W	24	MSF
		3. Scrub	M	90	MSF
		1. Sweep (or dust mop)	D	11	MSF
		2. Damp Mop	D	17	MSF
1.2 Lobbies	Terrazzo V/A Tile	3. Buff (Add Finish)	D	51	MSF
		4. Recondition	W	64	MSF
		5. Strip & Refinish	S	200	MSF
		1. Sweep	D	15	MSF
		2. Damp Mop	2W	24	MSF
	Concrete	3. Scrub	W	90	MSF
		1. Sweep (1st Fl only)	D	11	MSF
		2. Dust Mop	D	9	MSF
		3. Damp Mop	D	17	MSF
		4. Buff (Add Finish)	D	48	MSF
1.3 Corridors	V/A Tile	5. Recondition	W	61	MSF
		6. Strip & Rewax	S	200	MSF
		(See 1.2 - Lobbies)			

Table 9-1. Typical Janitorial Services Frequency and Manpower Data (Continued)
(Normal Class 2)

Area	Type	Operation	Frequency	Time (Minutes)	Unit
<u>1.0 Floor Maintenance (cont)</u>					
1.4 Executive Offices Lobbies, Conference Rooms	Carpet	1. Vacuum 2. Shampoo	D S	35 120	MSF MSF
<u>2.0 Wall Maintenance</u>					
2.1 Offices, Labs, Instrument Rooms, Tech Work Areas	Mahogany	1. Dust 2. Polish	W M	35 210	MSF MSF
	Fabric	1. Spot Clean 20% of wall surface	Q	7	MSF
	GSA Parti- tion	1. Dust	W	35	MSF
2.2 Lobbies	Fabric	1. Spot Clean	W	35	MSF
	Specialty Item	1. Spot Clean 2. Polish	W M	35 210	MSF MSF
2.3 Corridors	Fabric	1. Spot Clean	W	3.5	MSF
<u>3.0 Appurtenance</u>					
3.1 Clear Glass, Interior		1. Spot Clean 2. Wash	W M	5 13	CSF CSF
3.2 Windows, Inside		1. Clean	S	13	CSF

Table 9-1. Typical Janitorial Services Frequency and Manpower Data (Continued)
(Normal Class 2)

Area	Type	Operation	Frequency	Time (Minutes)	Unit
<u>3.0 Appurtenance (cont)</u>					
3.3 Windows, Lobby	1. Spot Clean 2. Wash		D W	5 13	CSF CSF
3.4 Venetian Blinds	1. Dust 2. Wash		Q A	2.5 8	CSF CSF
3.5 Diffusers/Grilles Ceiling Wall	1. Damp Wipe 2. Damp Wipe		M W	3.3 3	EA EA
3.6 Drinking Fountain	1. Damp Wipe 2. Polish Top 3. Sanitize		D D D	1.2 .7 .5	EA EA EA
3.7 Coolers, Water	1. Damp Wipe 2. Clean & Sanitize Sump		D D	1.2 1	EA EA
3.8 Ledges, Window, Chair Rails	1. Damp Wipe		W	1	CLF
3.9 Urns, Floor	1. Empty		D	.8	EA
3.10 Urns, Wall Mounted	1. Empty 2. Damp Wipe 3. Polish		D D W	.8 1.1 2.5	EA EA EA
3.11 Fire Hose Cabinets	1. Dust Wash		W	.30	EA

Table 9-1. Typical Janitorial Services Frequency and Manpower Data (Continued)
(Normal Class 2)

Area	Type	Operation	Frequency	Time (Minutes)	Unit
<u>3.0 Appurtenance (cont)</u>					
3.12 Doors/Frames Plain		1. Damp Wipe	W	.85	EA
3.13 Doors/Frames W/Glass		1. Damp Wipe	W	1.35	EA
3.14 Doors, Lobby		1. Wash	D	4	EA
3.15 Doors, Elevator	Painted	1. Clean	D	2.7	EA
	Stainless Steel	1. Polish 2. Clean	W D	8.5 2.7	EA EA
3.16 Elevators		1. Sweep Floor 2. Damp Mop Floor 3. Recondition Floor 4. Strip & Rewax 5. Damp Wipe Ceiling & Walls	D D W Q D	1.2 3.9 15 32 7.6	EA EA EA EA EA
<u>4.0 Office Furniture</u>					
4.1 Desks		1. Clean 2. Polish	D A	.93 10	EA EA
4.2 Tables		1. Clean 2. Polish	D A	.49 6	EA EA
4.3 Chairs		1. Clean 2. Polish	D A	.58 3	EA EA

Table 9-1. Typical Janitorial Services Frequency and Manpower Data (Continued)
(Normal Class 2)

Area	Type	Operation	Frequency	Time (Minutes)	Unit
<u>4.0 Office Furniture (cont)</u>					
4.4 Cabinets, Filing	1. Clean		D	.48	EA
4.5 Cabinets, Storage	1. Clean		W	1.6	EA
4.6 Waste Receptacles	1. Empty		D	.2	EA
	2. Clean		D	.51	EA
4.7 Book Cases	1. Clean		D	.51	EA
	2. Wash		A	4.50	EA
4.8 Coat Racks	1. Dust		W	.60	EA
4.9 Ash Trays	1. Empty & Damp Clean		D	.37	EA
4.10 Telephones	1. Damp Clean		M	.45	EA
4.11 Misc Desk Items	1. Damp Clean		M	.36	EA
4.12 Black Boards	1. Damp Clean Chalk Trays		D	.13	EA
	2. Dust Erasers		D	.13	EA
	3. Wash		W	2.1	EA
4.13 Bulletin Boards Picture Frames	1. Dust		W	.25	EA
	2. Clean, Damp		Q	.61	EA

Table 9-1. Typical Janitorial Services Frequency and Manpower Data (Continued)
(Normal Class 2)

Area	Type	Operation	Frequency	Time (Minutes)	Unit
5.0 Rest Rooms					
5.1 Floor Maintenance	Ceramic Tile Concrete	1. Sweep	D	18	MSF
		2. Wet Mop (Sanitize)	D	120	MSF
		3. Scrub	Q	180	MSF
	V/A Tile	1. Sweep	D	18	MSF
		2. Damp Mop	D	90	MSF
		3. Buff (Add Finish)	W	61	MSF
		4. Recondition	M	122	MSF
		5. Strip & Rewax	Q	300	MSF
5.2 Wall Maintenance	Ceramic Tile	1. Damp Wipe	D	35	MSF
		2. Wash & Sanitize	W	150	MSF
5.3 Fixtures	Painted	1. Damp Wipe	W	35	MSF
	Cubicles	1. Damp Wipe and Sanitize	D	1.3	EA
	Wash Basins	1. Wash and Sanitize	D	2	EA
	Commodes Urinals	1. Wash and Sanitize	D	2	EA
	Towels Seat Soap Tissue	1. Clean & Service	D	1.5	EA
5.4 Dispensers		1. Clean & Service	D	1.5	EA
		1. Clean & Service	D	1.5	EA
		1. Clean & Service	D	1.5	EA
		1. Clean & Service	D	1.5	EA

Table 9-1. Typical Janitorial Services Frequency and Manpower Data (Continued)
(Normal Class 2)

Area	Type	Operation	Frequency	Time (Minutes)	Unit
5.0 Rest Rooms (cont)					
5.5 Receptacles	Waste Sanitary Napkin	1. Empty & Damp Wipe	D	.8	EA
		1. Empty and Wash	D	4	EA
5.6 Lockers		1. Dust	D	.3	EA
		2. Damp Wipe	M	1.1	EA
5.7 Showers		1. Damp Wipe	D	5.1	EA
		2. Wash	W	5.7	EA
6.0 Stairwells					
6.1 Flights	All	1. Clean (operations detailed below)	D	20	FLT
6.2 Landings	V/A Tile Terrazzo	1. Sweep	D		
		2. Damp Mop	D		
		3. Buff (Add Finish)	D		
		4. Recondition	M		
		5. Strip & Rewax	S		
	Concrete	1. Sweep	D		
		2. Damp Mop	2W		
		3. Scrub	W		
6.3 Treads	Terrazzo	1. Sweep	D		
		2. Damp Mop	2W		
		3. Scrub	W		
		4. Clean & Reseal	S		

Table 9-1. Typical Janitorial Services Frequency and Manpower Data (Continued)
(Normal Class 2)

Area	Type	Operation	Frequency	Time (Minutes)	Unit
6.0 Stairwells (cont)					
Treads	Rubber	1. Sweep (vacuum) 2. Damp Mop 3. Scrub	D D S	20	FLT

Legend:

- | | |
|-------------------|-------------------------|
| D = Daily | EA = Each |
| W = Weekly | CLF = 100 linear feet |
| 2W = Twice weekly | CSF = 100 square feet |
| M = Monthly | MSF = 1,000 square feet |
| Q = Quarterly | FLT = Flight |
| S = Semiannually | V/A = Vinyl/asphalt |
| A = Annually | |

JANITORIAL

WORK ASSIGNMENT SHEET

BUILDING M7-355
 ASSIGNMENT AREA 2nd Floor East
 ROOM NUMBERS 101, 115, 131-135
 SHIFT DAY

ASSIGNED TO JOHN DOE
 LEAD SMITH
 FOREMAN BROWN
 DATE 1-1-66

TIME	JOB DESCRIPTION & INSTRUCTIONS	FREQUENCY	MATERIAL - EQUIPMENT - INSTRUCTIONS
0730-0930	A. Clean Office Areas	Daily	
	1. Empty and damp wipe ash trays.	Daily	1. Clean damp cloth or treated cloth
	2. Empty and damp wipe urns and waste receptacles.	Daily	2. Portable trash hamper or barrel
	3. Dust & clean furniture (see schedule).	Daily	3. Clean sanitized cloth (damp as required)
	4. Dust and spot clean doors, walls, partitions.	Per Schedule	4. Clean damp cloth
	5. Spot clean and wash windows, glass, drinking fountains, & other appurtenances (see schedule).	Per Schedule	5. See specific technical instructions manual
	6. Dust mop, damp mop, scrub, recondition, and buff floor.	Per Schedule	6. See specific technical instructions manual
	7. Arrange furniture after strip & rewax crew has refinished floor.	As Required	7. N/A
0930-1130	B. Clean & Service Rest Room		
	1. Empty and damp wipe waste receptacles.	Per Shift	1. Clean damp cloth & portable trash barrel
	2. Clean, refill, & check operation of dispensers.	Per Shift	
	a. Paper towel dispensers	Per Shift	a. Paper towels stock #8540-262-7178
	b. Hand soap (liquid) dispensers	Per Shift	b. Liquid soap stock #8520-228-0598

Figure 9-2. Sample Janitorial Work Assignment Sheet

9.7.1.2 Area Maintenance Foreman. The Area Maintenance Foreman shall:

- a. Continually review all trouble calls.
- b. Assign trouble calls to the respective shift for accomplishment, indicating the required completion time.
- c. Enter in the Janitorial Log all items found during routine inspection which all shifts should be aware of and/or needs to be accomplished.
- d. Assign the items of step c to the respective shift or accomplishment, indicating the required completion date.
- e. Ensure that the log is available to all shifts and coordinate janitorial requirements with the Area Services Foreman.
- f. Review the log for indicated work accomplishment before starting a new shift.
- g. Reassign the tasks if not completed, noting the priority.

9.7.1.3 Day-Shift Janitor Foreman. The day shift Janitor Foreman shall:

- a. Review the log for immediate requirements before starting a new shift.
- b. Throughout the day, continually check the log for trouble calls and/or special request.
- c. Sign off on all work completed by his shift.
- d. Advise the Area Maintenance Foreman of all items found during routine inspection that should be assigned to the night shift.

9.7.1.4 Night Janitor Foreman. The night Janitor Foreman shall:

- a. Review the log for immediate requirements before starting a new shift.
- b. Acknowledge the accomplishment of all tasks completed by signing the Completion column of the log.
- c. Advise the Area Services Foreman of items not completed.

d. Advise the Area Services Foreman of routine task assignments that were not completed. Make final inspection of all buildings and facilities within areas of responsibility and advise the Area Services Foreman of the condition of each.

9.7.1.5 Area Services Foreman. The Area Services Foreman shall:

- a. Review all logs each night.
- b. Assist Aircraft Services International (ASI) personnel, as required, in planning the accomplishment of tasks.
- c. Ensure that all top priority assignments are completed within the assigned time.
- d. Enter in the log information pertinent to the Area Maintenance Foreman.

NOTE

Use an AVO to report major problems and complaints.

9.7.2 **BUILDING JANITORIAL INSPECTION SHEETS.** The following procedure will be used in all areas for the handling of Building Janitorial Sheets.

- a. The Area Maintenance Foreman will ensure that all buildings within his area of responsibility are scheduled to be thoroughly inspected once each week.
- b. The Area Services Foreman making the inspections will ensure that the responsible Janitorial Foreman accompany him on all inspection tours.
- c. The Inspection Sheet will be used to indicate the general condition of specific items.
- d. All items rated below average and all items listed under Remarks will be assigned to the responsible Janitorial Foreman.
- e. The Janitorial Foreman will acknowledge the accomplishment of all items completed by signing and then returning the check sheets.
- f. The Area Maintenance Foreman will maintain a file on all completed check sheets.

9.7.3 CLARK-A-MATIC FLOOR MAINTAINER OPERATION DUTIES. The Janitorial Foreman shall be acquainted with the operation of the Clark-A-Matic floor maintaining machines and shall be responsible for instructing each operator in the use and care of the equipment. The following operational steps and precautions shall be adhered to.

a. Disconnect battery charger as follows:

1. Turn battery charger switch to **OFF** position.
2. Disconnect ac plug from wall outlet.
3. Disconnect dc plug.
4. Close battery compartment lid.

b. **DO NOT** apply more brush pressure than required. Most scrubbing jobs can be accomplished by pulling back on the top lever and allowing the handle to move forward until it stops.

c. The operator must make **NO** squeegee adjustment. The squeegee is adjusted at the factory.

d. Use only a soluble cleaner or nonfoaming detergent.

e. Always drain the back tank before refilling the front tank.

f. Empty the vacuum tank as required.

g. Clean and flush the vacuum and solution tanks with clear water after each day's operation.

h. If the machine begins slowing down, turn the machine off; then, put the batteries on charge as follows:

1. Open the battery compartment lid.
2. Ensure battery charger switch is in **OFF** position.
3. Connect dc plug.
4. Connect ac plug to 110-volt wall outlet.
5. Turn battery charger switch to **ON** position.

9.8 JANITORIAL WORK PROCEDURES

The following Janitorial Work Procedures include work techniques, tool and material lists, frequencies of operation, and work-quality standards.

9.8.1 GENERAL CLEANING INFORMATION.

9.8.1.1 Sweeping. Dirt may be removed from a surface by sweeping with a brush or broom, by vacuuming, or by a combination of pushing and absorbing the dirt with a sweeping mop. A sweeping mop should be used for sweeping offices and other areas where there is furniture and/or equipment. A 24- or 36- inch dust mop or yarn broom should be used for sweeping corridors and other open spaces to pick up heavy dirt or mud.

9.8.1.2 Mopping. The mop is used to spread the washing (and rinsing) solution on the floor, rub the dirt loose, and soak up the solution from the floor. The washing solution (soap and water) is used to soften the dirt and suspend it (after it has been rubbed loose by the mop). Thus, as the solution is soaked up by the mop, the suspended dirt is carried with it. In most instances, mopping is necessary; yet, to some extent, it is harmful to all kinds of floors. Much of the damage can be eliminated if the following rules strictly followed.

- a. Never use a mopping solution stronger than is necessary to remove the dirt.
- b. Use no more water than necessary to do the job.
- c. Leave the water on the floor only enough to loosen dirt.
- d. Change water frequently. Dirty water will not wash effectively. This applies to both wash and rinse water.
- e. Mop, rinse, and dry one small area of the floor at a time. This reduces the length of time that water stands on the floor.
- f. Do not splash baseboards, furniture, and other equipment with mop water. If the legs of furniture become dark from mop water or wax, wash them with a soft cloth and a solution of warm water and neutral soap. Rinse them with clear water and dry with a clean dry cloth.
- g. Do not allow water to seep under furniture, baseboards, or equipment.
- h. Mop the following places by hand: hard-to-reach places, behind radiators, and in corners.

9.8.1.3 Asphalt-Tile Floor Care. Because oils soften asphalt, only water emulsion (self-polishing) waxes and cleaners that contain no solvents or oils should be used. Never use any oil sweeping compound, oil treated mops, varnish, or floor sealers. Daily maintenance should include cleaning loose dirt from the floor with a dust mop, vacuum cleaner, or damp mop. Occasionally, a wet wash may be necessary

to remove traces of traffic. When this is done, use only clean, cold water so that the wax will not be removed. Then, buff well to restore the floor's luster. When a floor becomes so dingy a cold water bath will not clean it, mop or machine scrub the floor.

9.8.1.4 Rubber-Tile Floor Care. Rubber-tile floors should be dust mopped, vacuum cleaned, or damp mopped each day. When necessary, clean with a mop dampened with cold water to avoid removing the wax. Never use a wax or cleaning agent that contains oil, coarse abrasives, or caustic alkali. Avoid the use of soap, because it may soften and swell the flooring. Wax with two thin coats of water emulsion wax. This improves the appearance of rubber-tile floors and prolongs their life. Frequent buffing will reduce the number of washings required. Should the floor become so dirty that ordinary brushing or vacuuming does not keep it attractive, mop or scrub the floor lightly with a machine using a soft brush. Rinse afterwards with clean, cold water and wipe dry. Simplify the job by doing small areas of the floor at a time. Stains and spots may be removed by rubbing the soiled areas with the utility tool.

9.8.1.5 Linoleum Floor Care. When linoleum has lost its factory finish, it should be protected by two thin coats of a water emulsion wax. If wax is not used, the base of wood and cork is exposed; then, scrubbing tends to bleach out the binding materials and permit crumbling. Soon the linoleum is deeply pitted, and then definite holes develop. Daily care with dust mop and/or damp mop must be given to protect the linoleum. Should the floor become very soiled, mop it or scrub it with a floor machine, using lukewarm solution of a mild or neutral soap and water. Because alkalies have an adverse effect upon linoleum, ensure that the soap or detergent used is neutral. Rinse the floor with the minimum amount of clean water necessary for the job. Damp dry the surface with the mop; then, rewax. A mild abrasive may be required to remove stains. Use benzene or naphtha to remove grease stains and chewing gum.

9.8.1.6 Cork Floors Care. Cork flooring is very porous and (unless finished properly) is a real dirt catcher. Manufacturers nearly always advise that the cork be sealed after installation, before any other finishing materials are applied. After sealing, apply thin coats of water emulsion-type wax. While the wax is still wet, polish thoroughly. The more wax that is worked into the cork the easier the floor will be to maintain. After the cork floor has been sealed with wax and polished, daily brushing or vacuuming will clear away ordinary dirt. Occasionally mop the floor with a mop dampened with cool, clear water or diluted synthetic detergent solution. When conditions demand, remove the wax with a warm synthetic detergent solution. Allow this solution to stand on the floor 2 to 5 minutes; then, scrub with a machine and mop up the residue. Rinse with clean water, dry immediately, and thoroughly rewax and then buff.

9.8.1.7 Wood Floor Care. Regardless of grain, sealed wood floors should be waxed. Before applying the wax, always clean the floor thoroughly and remove the old finish. Apply two light coats of wax with a lamb's wool applicator or a mop (this

will not necessarily apply to mill floors.) Loose dirt should be cleaned off wood floors regularly with a soft brush or vacuum cleaner.

9.8.1.8 Concrete Floor Care. Because concrete is subject to dusting, it is best to have the floor sealed with a penetrating sealer. This toughens the surface and makes it smoother and easier to sweep and clean. Concrete floors should be cleaned of loose dirt regularly. Use a soft brush, dust mop, or vacuum cleaner; or mop the floor. When giving the floor a wet wash, first wet the surface with clear water; then, if the floor is unpainted, scrub with a hot synthetic detergent solution. Do not use soap or any washing solutions containing carbonates or Trisodium Phosphate on unpainted concrete. Mop up any residue, rinse the floor with clean water, and dry. Greasy soils should be wet with water and scrubbed with a solution of synthetic detergent. Abrasive scouring powders may be mixed with such a solution if the soil is deeply embedded. Rinse well and dry.

9.8.1.9 Marble Floor Care. Except for periodic wet cleaning, marble floors need only be swept daily with a dust mop or vacuum cleaner. When scheduled for wet cleaning, marble floors should be wet with clean, warm (not hot) water, sprinkled sparingly with mild abrasive cleaner, and then scrubbed or mopped either by hand or machine with a little water. Rinse the floor thoroughly with clean water and dry with a mop or squeegee. Do not allow dirty water to stand on marble floors, because the dirty water will seep into the pores and discolor the marble. Most light stains may be removed by applying a mixture of javelle water and ammonia water to the stained area and then rinsing with clear water. Avoid the use of acids, coarse abrasives, or sweeping compounds containing oil, sand or other abrasives, waxes, sealers, and other surface coatings.

9.8.1.10 Terrazzo Floor Care. Sweep terrazzo floors daily with a dust mop or vacuum cleaner. An occasional damp mop will be required to remove minor soil. A thorough cleaning of these floors should be given periodically. Wash the floors with a warm detergent solution. To remove stubborn stains and old accumulations of wax, use a nonalkaline abrasive cleaner. Grease and other spots can often be removed with such a cleaner. After each thorough cleaning, a good penetrating sealer should be applied to the floor. To add to the luster of the floors and reduce maintenance, one thin coat of wax should be applied to the sealed terrazzo. Do not use acids or strong alkalis on terrazzo floors, because terrazzo contains marble chips. Acids and strong alkali seep into the pores of the marble and cause spalling (chipping or breaking to pieces) as a result of expansion when the materials crystalize. The visible result is a fine powder on the surface of the floor.

9.8.2 DUST MOPPING AND SWEEPING. Wood, linoleum, asphalt, terrazzo, rubber, and vinyl floors should be dust mopped at least once a day to remove dust and light soil. Dust mopping will not remove spillage, scuff marks, stains, or heavy soil; but it is more effective than brush sweeping. A dust mop picks up and holds dust, whereas a brush leaves dust on the floor and also flicks dust into the air to later settle on the furnishings and on the floor.

CAUTION

Care should be taken to avoid hitting low hanging light fixtures, pictures, bookcases, door glass, etc.

9.8.2.1 Tools. The tools for dust mopping and sweeping are as follows:

1. Dust mop
2. Floor brush
3. Counter brush
4. Putty knife
5. Dust pan

9.8.2.2 Frequency. In office buildings, dust mopping and sweeping, as directed, will be performed once each day.

9.8.2.3 Procedure. The procedure for dust mopping and sweeping is as follows:

- a. Take equipment to work area.
- b. Start on far side of area and work toward corridor door or main aisle.
- c. With putty knife, remove tar, chewing gum, etc from floor. Take care to avoid cutting or scarring floor with putty knife.
- d. With counter brush, remove dust from corners or other areas which cannot be reached with dust mop.
- e. Dust mop under coat racks, typewriter stands, trash baskets, displays, etc. (When moving an item to dust the floor space it occupies, ensure that the item is returned to its original position.)
- f. Do not lift dust mop from the floor except when necessary. When mop becomes dust saturated, take it to trash hamper and shake out excess dust.
- g. Sweep debris into dust pan; dump debris into trash hamper.
- h. When finished in an area, switch off all lights, close door, and proceed to next work area.

- i. When through with tools, clean and return them to storage area.
- j. Report any defective equipment or safety hazards noticed.

NOTE

Laboratory areas will be cleaned by using an 18-inch floor brush.

9.8.3 WET MOPPING.

9.8.3.1 Tools and Materials. The tools and materials for wet mopping are as follows:

- 1. Double mop tank and wringer or 32-quart bucket with wringer
- 2. Detergent
- 3. 4-inch scraper
- 4. Utility tool
- 5. 24-ounce mop (wet type)

9.8.3.2 Frequency and Rate. Office buildings should be wet mopped once each week. Normally, an area of 2,500 square feet should be mopped per hour.

9.8.3.3 Mopping Techniques.

- a. Stand with feet 18 to 24 inches apart, one foot slightly behind the other.
- b. Keep mop in continuous motion by making a C turn to reverse mop direction.
- c. Keep mop head on floor and strands spread.
- d. Be sure to overlap areas near baseboards and furniture.

9.8.3.4 Procedure. The procedure for wet mopping is as follows:

- a. Prepare cleaning solution:
 - 1. Fill mop tank 3/4 full with water.
 - 2. Add detergent as specified by supervisor.
- b. Take tools to work area:
 - 1. Stand behind mop tank.
 - 2. Place mop against far side of tank and push to work area.

c. Move light obstructions out of the way:

1. Whenever possible, move all small equipment out of room into corridor or place on counters. When this is not feasible, move equipment to one side of room.
2. Do not place furniture on desks or tables.
3. Do not move desks, file cabinets, etc.

d. Mop floor:

1. Dip mop into solution, wring, apply mop to floor. One mopful should cover a 100-square foot area.
2. Avoid slopping furniture, displays, and baseboards by making the first stroke parallel to baseboards and edges of furniture.
3. Mop corners by hand with strands of mop.

e. Mop with floor finish:

1. Add 2 to 4 quarts of floor finish to 5 gallons of water.
2. Apply solution to floor as outlined in d above.

f. "Spot" floor by using scraper or utility tool to remove dirt, tar, gum, etc not removed by mopping operation.

g. Pick up cleaning solution:

1. Using mop with which solution was applied, mop up solution.
2. When mop becomes saturated, rinse and wring out in tank containing solution.
3. Turn mop often to utilize full absorbency.

NOTE

When wringing mop, avoid hitting lights, bookcases, etc.

h. Rinse floor:

1. Dip a clean mop in tank containing clear water.
2. Wring and damp mop floor to remove cleaning solution.

9.8.3.5 Work Standards. When wet mopping is completed:

1. The floors should be uniformly clean.
2. There should be no splashes on baseboards and furniture.

NOTE

Water should not be allowed to spill on baseboards, file cabinets, fixtures, etc.

3. There should be no streaks on the floor.

9.8.4 STRIPPING AND WAXING TILE FLOORS.

9.8.4.1 Tools and Materials. The tools and materials for stripping and waxing tile floors are as follows:

1. Two 32-quart buckets with wringers
2. Three 24-to 32-ounce cotton scrub mops
3. Floor machine
4. Counter brush and dust pan
5. Wiping cloth
6. Wax remover
7. Floor finish
8. Putty knife
9. Dust mop or sweeping brush
10. Nylon or steel-wool scrubbing and buffing pads

9.8.4.2 Frequency and Rate. Tile floors in corridors should be stripped and rewaxed once every 2 months. Normally, 1,000 square feet of tile should be stripped and waxed per hour.

9.8.4.3 Procedure. The procedure for stripping and waxing tile floors is as follows:

- a. Prepare solution:
 - 1. Fill one bucket $\frac{3}{4}$ full with hot water.
 - 2. Fill second bucket $\frac{3}{4}$ full with clear, cold water.
- b. Take tools and materials to work area:
 - 1. Place mops in buckets and push to work area.
 - 2. Avoid hitting walls, equipment, and furniture.
- c. Clear area to be cleaned:
 - 1. Whenever possible, move all furniture and equipment from area to be stripped. When this is not feasible, move to one side of room.
 - 2. Do not place furniture on desks or tables.
- d. Sweep and pick up paper, dirt, etc before beginning the stripping operation.
- e. Apply stripping solution to floor:
 - 1. Dip mop into solution; then, allow excess solution to run off before applying mop to floor. Care should be taken to apply only enough solution to do the job; too much water will harm any floor. In most cases, one mopful should cover an area of 40 to 50 square feet.
 - 2. For best results, allow stripping solution to remain on floor for 5 minutes. (When stripping solution is applied to a waxed surface, a chemical reaction results which emulsifies the wax and holds it in suspension so that it can be removed with the solution.)
- f. Using utility tool, remove wax where buffing machine will not reach (along baseboards, in corners, etc)
- g. Scrub floor:
 - 1. Using floor machine, start in rear of room (or area farthest from the water supply) and scrub floor.
 - 2. To remove stubborn spots, "heel" machine so that edge of brushes hits spots to be removed.
 - 3. Have machine under control at all times.

h. Pick up solution:

1. Pick up solution with same mop that solution was applied with.
2. When mop becomes saturated, wash and wring out in bucket containing solution.
3. Turn mop often to utilize full absorbency.
4. When cleaning corridors or large uncongested areas, pick up solution with wet pick-up type vacuum machine.

i. Rinse floor:

1. Dip mop into bucket containing clear water; wring mop; then damp mop floor.
2. When mop becomes saturated with solution, wring mop and then repeat step 1.
3. Continue steps 1 and 2 until solution has been picked up from floor.

j. Dry floor:

1. Wring mop; then move mop over floor until saturated.
2. Repeat step 1 until rinse water is picked up from floor.

k. Wipe splashes off all baseboards, walls, and furniture. Clean corners:

1. Using damp cloth, wipe off baseboards, walls, and furniture.
2. Where damp cloth does not remove marks, use detergent and water in the ratio of 1/2 pint of detergent to 5 gallons of water.

l. Allow floor to dry; then apply floor finish:

1. Dip 20-ounce string wax mop into wax (floor finish), wring slightly, and apply thin even coat of floor finish to dry floor.
2. Allow to dry for 30 minutes; then apply second coat of floor finish.

m. After checking to ensure floor is dry, return all moved furnishings to their original locations.

- n. Clean and return equipment to storage area.

9.8.4.4 Work Standards. After the wax has been removed from the floor, the floor should be uniformly clean in appearance and free from streaks and standing water. When the stripping and waxing operation is complete, the floor finish should be on the floor in thin, even coats (no excess finish on floor); there should be no splashes of dirty water on the baseboards, walls, and furniture; and all furniture and equipment should be back in their original location.

9.8.5 STRIPPING AND WAXING HARDWOOD FLOORS.

9.8.5.1 Tools and Materials:

1. Floor machine with scrub and buffing brushes
2. Steel-wool pads
3. Two 24- or 32-ounce wet mops
4. One treated dust mop
5. Mop buckets and wringer
6. 4-inch scraper
7. Dust pan
8. Mineral spirits.

9.8.5.2 Frequency and Rate. Hardwood floors should be stripped and waxed once every 6 months. The stripping and waxing operation should be completed at the rate of 200 square feet per hour.

9.8.5.3 Procedure.

CAUTION

The solvent is highly flammable.

- a. Prepare cleaning solution by putting 2 gallons of solvent in one bucket.
- b. Dust mop area to be cleaned:
 1. Remove loose soil, paper, etc with dust mop.
 2. Remove gum, tar, etc with scraper.
- c. Move light obstructions out of way:
 1. Whenever possible, move all small obstructions such as chairs, tables, trash cans, etc into corridors.

2. Move desks, files, and large tables to one side of room.

3. Do not place furniture on desks or tables.

- d. Apply stripper (solvent):

1. Dip mop into solvent and then apply to floor. Use caution; the solvent is highly flammable.

2. Make first stroke parallel to baseboards and edges of furniture to avoid hitting furniture and baseboards with mop.

3. Apply no more solution than necessary to do the job.

- e. Using floor machine and pad of steel wool, continue to scrub floor until all wax is removed.

- f. Hand scrub corners and baseboards to remove wax from areas that floor machine does not reach. Use scraper where necessary.

- g. Check baseboards and furniture, and remove any spattering left by stripping operations. Solution spattered on walls, baseboards, furniture, etc. cannot be removed if allowed to dry. Therefore, if spattering occurs, remove it immediately.

- h. Pick up stripping solution:

1. Pick up solution with a 32-ounce mop.

2. When mop becomes saturated, wash and wring out in bucket containing solution.

3. Turn mop often to utilize full absorbency.

4. Avoid hitting lights, bookcases, etc. with mop handle.

- i. Allow floor to dry. A wood floor stripped with solvent will usually dry in 1 hour. However, a longer drying period may be required under certain weather conditions. Check floor and ensure it is dry before applying wax.

- j. Apply wax:

1. Using dispenser, apply a thin coat of paste wax.

2. Allow to dry.

k. Buff floor, using machine equipped with buffing brush or pad, until gloss appears.

l. Dust all furniture and return it to original location.

m. Return equipment to storage:

1. Ensure all equipment is dry before storing.
2. Report all defective equipment to supervisor.

9.8.5.4 Work Standards. When the stripping and waxing operation is completed:

1. The wax should be on the floor in thin, even coats (no excess wax on floor).
2. There should be no splashes of dirty water or wax on the baseboards, walls, and furniture.
3. All the furniture and equipment should be back in their original locations.

9.8.6 FLOOR BUFFING, HARDWOOD AND TILE.

9.8.6.1 Tools and Materials.

1. Floor machine, 16- to 23-inch
2. Buffing brush
3. Steel wool or buffing pads (if used)

9.8.6.2 Frequency and Rate. Hardwood and tile flooring should be buffed as needed. When performed, the operation should be completed at the rate of from 2,000 to 3,000 square feet per hour.

9.8.6.3 Procedure.

a. Take equipment to work area.

1. Put wheels down on machine and push machine to work area.
2. If necessary to go to another floor and an elevator is not available, get help to transport the machine. Do not attempt to carry machine up or down steps alone.

b. Check equipment:

1. Check cords for exposed or loose wires.
2. Check switch to see if it is releasing properly.

c. Prepare machine for buffing:

1. Turn machine on side and attach brush to clutch.
2. Turn brush until it locks in place.
3. Ensure machine is not connected to power until brush has been attached.

d. Operate machine:

1. Lift wheels.
2. Holding machine level, press switch.
3. To move machine to right, raise handle.
4. To move machine to left, press down on handle.
5. To move machine forward, press on left handle.
6. To move machine backward, press on right handle.

e. Begin buffing operation:

1. Start approximately 4 feet from wall and swing (left and right) machine in a 6-foot arc (approximately).
2. As each arc (left or right) is completed, step back 18 inches and reverse the direction. Continue until buffing is completed.
3. Avoid hitting furniture, equipment, etc with machine.

f. Clean and store equipment:

1. Disconnect machine from power.
2. Remove brush from machine.
3. Wind cord loosely around handle.
4. Wipe machine with dry cloth and return to storage area.
5. Do not leave brush attached to machine.

9.8.6.4 Work Standards. When the buffing operation is completed:

1. The floor should have a uniformly buffed appearance.
2. There should be no visible buff marks.
3. The furniture, baseboards, etc should show no machine marks.
4. All the furniture and equipment should be back in their original

locations.

9.8.7 DUSTING. Dusting office furniture or fixtures is important not only for appearance, but because accumulated dust can soil clothing and papers and irritate eyes and lungs. Equipment dusting means removing the dust, not flicking in into the air. Usually, dusting is the second job in the daily schedule. However, where dust deposits are heavy, this job may be scheduled as a specific project. Two types of dusting are performed, horizontal and vertical. Vertical surfaces require less frequent dusting than horizontal surfaces, because the dust settles on vertical surfaces more slowly. In heavy dust areas, however, vertical dusting may be necessary every week. In cleaner or air-conditioned areas, vertical dusting may be necessary only once a month. When making out the daily dusting schedule, it is best to include some of the vertical dusting in the assignment for each day. For example, if weekly vertical dusting is required, 1/5 of the week's vertical dusting should be included in each day's assignment. Thus, by the end of the week, the vertical dusting will be completed.

9.8.7.1 Tools and Materials

1. Treated dust cloth
2. Treated dust mop

9.8.7.2 Procedure

- a. Prepare tools and take them to work area.
- b. Dust files, desks, tables, window sills, and other flat surfaces.
 1. Do high surfaces first; then, work downward.
 2. Move objects to dust under them. (For heavy objects that are non-marking, this is best done by sliding. For light objects, hold them above their original positions while dusting; then, replace them immediately.)
 3. Do not move work papers; dust around them.
 4. Do not bunch the cloth into a ball.
 5. As the cloth becomes soiled, turn or refold it to a clean side.
- c. Clean and return tools to storage area.
- d. Report to supervisor any breakage of furniture, windows, lights, or other objects.

9.8.7.3 Work Standards. When the work is completed:

1. All waste receptacles should be emptied, and there should be not dirt or debris stuck to the bottom of the receptacle.

2. The inside and outside of the waste receptacles in offices and public area should be clean (wiped clean with damp cloth). Ash trays are to be dumped and wiped out with a damp cloth to remove ashes and tobacco stains.

3. All dust should be removed from tops of desks and bookcases, under furniture, and behind doors; no dust streaks should be visible on floor.

4. Baseboards, equipment, and furniture should not be marred as a result of being struck by dust mops, brushes, etc.

9.8.8 TRASH REMOVAL. Trash removal, sweeping, and dusting are performed as one operation. Upon entering an area, trash removal, sweeping, and dusting will be completed before proceeding to the next area.

9.8.8.1 Tools and Materials.

1. Trash hampers
2. One 18-inch broom
3. One dust pan
4. One counter brush
5. One treated dust cloth
6. One treated dust mop
7. One putty knife
8. One butt can filled 1/3 full with water
9. One damp cloth

9.8.8.2 Frequency and Rate. Trash removal should be performed daily. This operation should be performed at the rate of 3,500 square feet per hour.

9.8.8.3 Procedure.

a. Take tools to work area.

1. Do not bump walls or equipment along the way. Be particularly careful when going through doors. (If the door is self-closing and opens outward, back against the door while pulling a trash receptacle through it. Then, step away and allow the door to close itself.)

2. When moving the trash receptacle, push it unless circumstances made it easier to pull.

b. Push receptacle close to wastebasket to be emptied. (It is easier than carrying wastebaskets to receptacle.)

c. Pick up any large pieces of wastepaper lying on the floor around the waste basket. (This may be done with one hand while leaning down to pick up the basket with the other hand.)

d. Empty baskets into receptacle.

1. When emptying wastebasket, turn it over as far down inside receptacle as possible. (This reduces flying dust and ashes.)

2. Hold basket with one hand and tap on side with other hand to dislodge paper.

3. As receptacle fills up, pack down waste with a basket. Do not use bare hands; waste may contain sharp items.

e. Empty pencil sharpeners.

f. Empty and damp-wipe ash trays

1. Avoid scattering ashes.

2. Empty ash trays well inside butt can.

3. Damp-wipe ash tray with one or two circular motions.

4. Wipe ash tray grooves stained with cigarette tars with straight motions and replace tray on desk.

g. Empty lavatory waste cans into receptacle. At same time, remove with a sifter cigarette butts and ashes from sand urns.

h. Empty vending machine waste. (Vending machine waste usually contains liquids. It should be emptied on top of lavatory waste so that paper towels can absorb liquids and prevent dripping and staining on the floors.)

i. Empty pickup receptacle.

1. When receptacle is full, push it to rear area of building.

2. Lift receptacle as follows: keeping back straight, bend knees and then raise receptacle by straightening legs while holding receptacle close to body.

9.8.9 VACUUMING RUGS AND CARPETS.

9.8.9.1 Tools.

1. Vacuum cleaner
2. Hose
3. Wand
4. Rug cleaning tool
5. Crevice tool

9.8.9.2 Frequency and Rate. Rugs and carpets should be vacuumed once a day. This operation should be accomplished at the rate of 3,500 square feet per hour.

9.8.9.3 Procedure.

a. Take tools to work area.

1. Wrap hose around vacuum cleaner.
2. Carry wand in one hand and push cleaner to work area with other hand.
3. Carry other accessories in pockets or on cleaner.

b. Place vacuum cleaner in central location of area to be cleaned:

1. To move cleaner short distances, pull on hose if cleaner is small, or push on cleaner if large.
2. When moving from one area to another, push cleaner.
3. Avoid bumping equipment, desk, etc.

c. Operate wand correctly:

1. Grasp wand near hose end with one hand to propel wand.
2. Guide wand with other hand, allowing wand to slide back and forth in hand as wand is moved forward and backward.

d. Use push-pull stroke:

1. Start at far side of room and work backward.
2. First stroke should be a push stroke to raise nap and remove imbedded dirt.

3. Second stroke should be a pull stroke over same area to re-lay nap.
4. Clean corners by removing floors tool and using hose only.
5. Avoid hitting walls, furniture, or equipment.

e. Clean equipment and return to storage area:

1. Remove dirt, debris, etc from dust bag and can.
2. Wipe extension cord and hose.
3. Change dust bags as needed.

9.8.9.4 Work Standard. When the work is completed, baseboards, furniture, etc should not be marred as a result of being struck by the cleaning equipment.

9.8.10 STAIRWAY CLEANING

9.8.10.1 Tools and Materials.

1. 18-inch floor brush
2. Counter brush
3. Dust pan
4. Putty knife
5. Scrub brush and wet mop
6. 24-ounce wet mop
7. Mop buckets and wringer
8. Wiping cloth
9. Liquid all-purpose cleaner
10. Concrete seal and floor finish for terrazo floors
11. Applicator and open pan

9.8.10.2 Frequency. This operation will be performed as needed.

9.8.10.3 Procedure.

a. Collect tools and take to work area. Do not hit walls, furniture, doors, etc on way to work area.

b. Prepare cleaning solution:

1. Fill mop bucket 3/4 full with cold water and proper detergent.
2. Fill a second bucket 3/4 full with cold water.

3. Take buckets to landing of stairway to be cleaned.
4. Set buckets to one side of stairway where they will not create a personnel safety hazard.

c. Sweep steps:

1. Using 18-inch floor brush (or counter brush), stand three steps below area being swept.
2. Sweep across steps and down.
3. Continue 1 and 2 until all steps are swept.

d. Pick up dirt.

1. Using counter brush and dust pan, sweep up dirt at landing.
2. Deposit dirt in waste receptacle.

e. Scrub steps:

1. Using scrub brush, dip into solution and scrub steps and risers from left to right.
2. Remove gum, tar, etc from steps with putty knife and dirt from corners of steps.

f. Pick up solution:

1. As a section of stairway is completed, pick up solution by dipping mop in rinse water, wringing and mopping steps.
2. Mop corners and risers by hand with mop strands.
3. Do not spill water on walls, risers, etc

g. Seal stairs (terrazzo and concrete only):

1. After stairs have been mopped, allow to dry. (Normal drying time is approximately 15 minutes.)
2. Using applicator, apply thin, even coat of seal on stairs and landing.

3. Avoid splashing sealer.

4. Close steps to traffic for at least 30 minutes or until dry.

h. Clean and return tools to storage area:

1. Wash out mop and applicator in warm water; then wring and hang up to dry.

2. Wash mop bucket, scrub brush, and dust pan; then, wipe dry and store in closet.

9.8.10.4 Work Standards. When the operation is completed:

1. There should be no water on the steps.

2. No mop strands should be left on steps.

3. Corners, risers, and railings should be clean.

CAUTION

Stairs should never be waxed or dressed.

9.8.11 WALL WASHING (OFFICES, LABORATORIES, AND PUBLIC AREAS).

9.8.11.1 Tools and Materials.

1. One wet portable type vacuum cleaner
2. One dry portable type vacuum cleaner
3. One 5-foot ladder
4. One 12-foot ladder
5. Two sponges
6. Wiping towels
7. Two 14-quart pails
8. Two 32-ounce cotton wet mops
9. One dust mop
10. One pair of rubber gloves
11. One desk brush
12. One radiator brush
13. One sweeping brush
14. One 16-inch bowl brush
15. Brass and furniture polish
16. Dust pan
17. 4-inch scraper

18. Steel wool
19. Abrasive cleaner
20. Detergent

9.8.11.2 Frequency and Rate. Walls should be washed once a year. This operation should be performed at the rate 3,000 square feet per each 8 manhours.

9.8.11.3 Procedure.

- a. Prepare solution:
 1. Fill 30-gallon mop tank 3/4 full with warm water.
 2. Add required amount of detergent.
- b. Take tools and materials to work area. Avoid hitting walls, furniture, and equipment on way to work area.
- c. Clear areas to be cleaned.
 1. Move equipment, furniture, pictures, and materials.
 2. Do not move chemicals unless authorized by supervisor.
 3. Do not move or handle scientific instruments.
- d. Remove dust:
 1. Using portable vacuum cleaner, vacuum all horizontal surfaces, pipes, and tops of light fixtures.
 2. Dust walls from top to bottom with treated dust mop.
- e. Remove light sections, wash, and replace:
 1. Before removing light sections, ensure light switch is in OFF position.
 2. Avoid hitting objects with light fixtures.
 3. Wear rubber gloves at all times.
- f. Set up wall washing equipment:
 1. Check all scaffolds or ladders for defects.
 2. After equipment is set up, ensure that it is anchored firmly.

g. Wash walls and shelves:

1. Dip sponge in cleaning solution.
2. Start at top of wall and wash down.
3. Wash wall in 3-foot sections, using a wide side stroke.
4. Rinse sections before cleaning solution dries.

h. Spot wall:

1. Using abrasive paste cleaner, remove stubborn spots not removed by washing.
2. Do not use abrasive cleaner on pointed walls unless necessary, since the cleaner will remove paint.

i. Replace materials on shelves. First, using dust cloth, remove dust from bottles, equipment, books, etc and then return them to original position on shelf.

j. Clean exhaust hoods.

1. Before cleaning hoods, ensure all materials, equipment, etc have been removed by laboratory technician.
2. Use germicidal solution
3. Shine all metal with abrasive cleaner and metal polish.

k. Polish laboratory benches, furniture, and metal equipment.

l. Mop floors: Dip 32-ounce wet mop in detergent solution and damp mop floors.

m. Replace equipment, materials, etc in original location in room.

n. Proceed to next work area.

o. At end of work day, clean tools and return them to storage area.

1. Wash pails and dry.
2. Wash out sponges, mop, and towels.
3. Wash off ladders and scaffolds.
4. Return tools to storage area.
5. Leave no materials or equipment in work area overnight.

9.8.11.4 Work Standards. When the operation is completed:

1. No wall should have streaks.
2. All film left by detergent should be gone (removed with a damp cloth).
3. Furnishings should have no spilled water on them.

9.8.12 RESTROOM CLEANING.

9.8.12.1 Tools and Materials.

1. 10-quart pail
2. Toilet bowl brush
3. Three sponges—red, green, and natural
4. Mop bucket (32-quart) and wringer (if required)
5. 24-ounce wet mop (if required)
6. Liquid germicidal cleaner (2 ounces per gallon of water)
7. Abrasive cleaner
8. Bowl cleaner (acid)
9. Paper towels, toilet paper, sanitary napkins, and hand soap.
10. Rubber gloves
11. 18-inch sweeping brush
12. Wiping cloths

9.8.12.2 Frequency and Rate. Restrooms should be cleaned once a day. This operation should be performed at the rate of 80 restroom fixtures per day.

9.8.12.3 Procedure.

a. Prepare cleaning solution and proceed to lavatory with tools:

1. Run 1 gallon of water into pail.
2. Add 2 ounces of germicidal cleaner to water.
3. Do not take mopping equipment. Mopping will not be performed at this

point.

b. Wipe drinking fountains on way to lavatory:

1. Dip damp, natural colored sponge in neutral cleaner and wipe fountains.
2. Remove stubborn stains with abrasive cleaner.

c. Damp-wipe dusty surfaces and spot-wipe where necessary:

1. Using green sponge, start wiping upon entering lavatory.
2. Wipe entrance door and wedge it open.

3. Wiping ledges, continue on in and place pail near first wash bowl to be washed.

4. Continue working way around room, systematically wiping dust, finger prints, and water spots off ledges, partition tops, dispensers, receptacles, shelves, lights (in reach), doors, door frames, door vents, walls, hinges, and light switches.

d. Wash all mirrors: Flick a little water from the faucets onto the mirrors and wipe with paper towel.

e. Wash all wash bowls, hardware, and soap dispensers:

1. With solution soak (but not dripping) green sponge, wipe all surfaces with fewest possible motions. Do not use same sponge used for toilet bowls; keep sponges separate.

2. Work down the line of wash bowls systematically. If necessary, use a little abrasive cleaner.

f. Rinse bowls and hardware, and damp-wipe walls around plumbing. Wipe with dry cloth:

1. Turn on faucet and rinse solution from bowls, using green sponge.

2. Damp-wipe spattered walls near bowls and plumbing under bowls with damp sponge.

3. Wipe water spots off bowls and hardware with dry cloth.

g. Scrub inside of commodes and urinals:

1. Pour some solution into bowls.

2. With toilet-bowl brush, scrub entire surface with circular motions.

3. Scrub flush holes (under rim) and passage or trap where stains and incrustations build up as result of a combination of organic matter, salts, and water hardness.

CAUTION

Do not get bowl cleaner on skin, clothing, or floors. This cleaner is an acid and may cause burns or other damage.

4. Use bowl cleaner as required
- h. Wash toilet seats, hardware, outside of commodes, and outside of urinals:
 1. Dip red sponge in solution; then squeeze out excess solution to prevent dripping.
 2. Wash both sides of toilet seat; leave seat in up position.
 3. Wash hardware and entire outside of commodes and urinals.
 4. Wipe with dry cloth.
- i. Fill all paper dispensers:
 1. Check toilet paper, towel, and sanitary napkin in liner dispensers and replenish with required amounts.
 2. Do not leave extra towels in restroom.
- j. Wet-mop the floor:
 1. Leave bucket and wringer outside lavatory entrance. To avoid marring corridor, place this equipment on a piece of cardboard.
 2. Apply solution to entire floor.
 3. Pick up solution from floor with well-wrung mop.
- k. Clean and return tools to storage area. Ensure pail, bucket, wringer, bowl brush, and sponges have been washed.
- l. Report leaky faucets, broken fixtures, or water pressure that causes splashing to supervisor.

9.8.12.4 Work Standards. No part of the building reflects more accurately the quality of custodial services than the cleanliness of the restroom. A restroom that is permitted to get in bad condition is difficult to restore to a desirable standard.

The floors and walls often absorb and hold human waste, and dirty water can become the source of a disagreeable odor. Fixtures accumulate dirt that becomes harder to remove. For these reasons, it is important that the job be done correctly. Therefore, when the operation is complete, toilet bowls, seats, urinals, basins, and other fixtures must be thoroughly clean.